

DOCUMENT RESUME

ED 053 401

CG 006 539

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TITLE Anxiety and School Related Interventions: A Selective Review and Synthesis of the Psychological Literature. Interpretive Study II. Division of Research Reports.  
INSTITUTION New York State Education Dept., Albany. Div. of Research.; Texas Univ., Austin.  
REPORT NO BSCR-003-71  
PUB DATE Mar 71  
NOTE 144p.  
AVAILABLE FROM New York State ERIC Service, Room 468 EBA, State Education Department, Albany, New York 12224  
EDRS PRICE EDRS Price MF-\$0.65 HC-\$6.58  
DESCRIPTORS \*Academic Achievement, Academic Performance, \*Anxiety, \*Behavior Change, Educational Environment, \*Educational Experience, Educationally Disadvantaged, \*Learning Difficulties, Psychological Patterns, Underachievers

ABSTRACT

This is the second in a series of studies designed to make the latest research on selected topics available to the educational community. Specifically, this report reviews, synthesizes, and interprets the literature on anxiety. The various chapters: (1) describe the different ways in which anxiety can be viewed as a response (eg. phenomenologically, physiologically, and behaviorally); (2) discuss and evaluate what learning theory, psychoanalytic theory, and cognitive theory have to say about anxiety; (3) contain information pertinent to the different methods for measuring anxiety; (4) present the research on the antecedents, concomitants and consequences of anxiety for learning and school performance; and (5) elaborate primary, secondary and tertiary intervention strategies which are feasible in the school setting. The appendices contain discussions focusing on testing for anxiety, as well as samples of a number of such tests. (TL)

ED053401

# DIVISION OF RESEARCH REPORTS

## INTERPRETIVE STUDY II

ANXIETY AND SCHOOL RELATED INTERVENTIONS:  
A SELECTIVE REVIEW AND SYNTHESIS  
OF THE PSYCHOLOGICAL LITERATURE

U.S. DEPARTMENT OF HEALTH,  
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THE UNIVERSITY OF THE STATE OF NEW YORK / THE STATE EDUCATION DEPARTMENT  
BUREAU OF SCHOOL AND CULTURAL RESEARCH / ALBANY, NEW YORK 12224

ED053401

Interpretive Study II

ANXIETY AND SCHOOL RELATED INTERVENTIONS

A Selective Review and Synthesis of  
the Psychological Literature

BSCR 003-71

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## FOREWORD

This is the second in a series of Interpretive Studies designed to make the latest research on selected topics available to the general educational community. It is hoped that these reports will constitute an effective and efficient vehicle for providing school personnel with the information they seek when planning educational programs. Division of Research Reports, Interpretive Study I dealt with language and language programs for disadvantaged children. The topic for this study is anxiety as it affects behavior in the school setting.

Discussions of what is necessary for the effective teaching of any particular subject generally begin with an analysis of the problems of curricular organization encountered and the types of teaching methods most appropriate for the content to be presented. Another major source of determinants of whether or not a student will successfully master the material is the student's own psychological functioning. Not only must the child have the intellectual capability to handle the tasks assigned and be motivated to undertake them, but he should be relatively free of psychological reactions that would interfere with learning. Anxiety is one of the most frequent psychological problems encountered in the school which serves to prevent the child from realizing his intellectual potential.

The choice of anxiety as the subject of this report is also a reflection of the growing concern that educators have developed for the emotional, as well as the intellectual, growth of children. This concern stems in part from the realization that the schools have a major impact on the personality development of the children in attendance. By developing an awareness of the origins of anxiety, the types of events that serve to trigger it, and the process by which it develops, it may become possible

to arrange the learning situation in such a way as to reduce its occurrence. Furthermore, recent research in the field of psychology has led to the development of techniques helping to reduce a person's level of anxiety after it has developed. By adapting these techniques to the school setting, we may be increasingly able to successfully aid the students in their psychological and intellectual growth.

The purpose of this report is to review, synthesize, and interpret the literature on anxiety. Chapter I describes the various ways in which anxiety can be viewed as a response. The major theories of anxiety are discussed and evaluated in chapter II. Emphasis is placed on learning theory, psychoanalytic theory, and cognitive theory. Chapter III contains information pertaining to the different methods developed for the measurement of anxiety. In chapter IV the research on the antecedents of anxiety arousal, the concomitants of anxiety, and the consequences of anxiety for learning and school performance are reviewed and evaluated. Finally, in chapter V recommendations concerning anxiety interventions which are feasible in the school setting are presented.

It is hoped that the material presented in this report will aid teachers in identifying the potential they have for helping the child's adjustment to his school situation, and will encourage school administrators and psychologists to develop techniques appropriate for their particular schools which can benefit the children experiencing the debilitating effects of intense anxiety.

We are indebted to Beeman N. Phillips, Professor of Psychology in the Department of Educational Psychology at the University of Texas at Austin, and to two of his graduate students, Roy P. Martin and Joel Meyers, for their efforts in reviewing the voluminous literature in the field and

for the preparation of this report. Dr. Phillips has conducted extensive research on the subject of school anxiety and has advanced specific proposals for interventions by the schools.

Our appreciation is also extended to Alan S. Waterman, assistant professor of psychology at Hartwick College, Oneonta, New York, who undertook the editing and technical revision of the manuscript and to Ruth Salter, associate in education research in the State Education Department who contributed substantially to the editing process. Finally, recognition should be given to Robert P. O'Reilly, chief of the Bureau of School and Cultural Research, under whose auspices these interpretive studies have been initiated and whose continuing involvement has helped to bring this project to fruition. However, the report represents the views of the original authors, and the interpretations and implications drawn are not necessarily those of the New York State Education Department.

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## CHAPTER I

### THE NATURE OF ANXIETY

The term "anxiety" has gained wide currency in psychological usage and in colloquial speech without achieving a singular precise definition. Anxiety is generally described in terms of the levels on which it operates: (a) the phenomenological level; (b) the physiological level; and (c) the behavioral level.

#### Phenomenological Aspects of Anxiety

The phenomenological description of anxiety involves the subjective experience of anxiety, that is, what a person refers to when he says he is anxious. It may be translated as apprehension, nervousness, worry, dread, tension, or a sense of impending disaster. While anxiety is generally viewed as a universal experience, it cannot be concluded that it is subjectively experienced in the same way by all people. Since everyone experiences anxiety to some degree, it is necessary to differentiate between instances of normal anxiety and what would be considered maladaptive anxiety. The dimensions along which such a discrimination can be made include: (a) the frequency of anxiety feelings; (b) their duration; (c) their intensity; and (d) the extent to which they interfere with adaptation of the individual to the demands of the day-to-day situations he encounters.

The term "fear" is sometimes used interchangeably with the term "anxiety" since the feelings referred to are similar in nature. However, the two terms are often distinguished on the basis of their implications about the adjustment of the individual to his environment. In this

context, fear is used to refer to an emotion which is proportionate to the degree of threat posed by some stimulus. Thus, fears are realistic responses to threat and aid the person in adapting to the environment. Anxiety, on the other hand, is used to refer to an emotion which is disproportionate to the degree of threat posed by a stimulus and, thus, is maladaptive.

### Physiological Aspects of Anxiety

On a physiological level, anxiety involves changes in organs innervated by the autonomic nervous system.<sup>1</sup> Among the physiological changes occurring during periods of high anxiety are increased heart rate, increased blood pressure, elevated body temperature, increased sweat gland secretion, elevated blood sugar levels, and decreased gastrointestinal activity. Not all individuals show all of these changes. Each person shows a characteristic response on one or more of these involuntary processes whenever anxiety is evoked. Unfortunately, these same physiological responses occur when the person is experiencing emotions other than anxiety. Thus, while autonomic nervous system activity may indicate that a person is emotionally aroused, it does not provide information as to whether he is anxious, angry, or happy.

In a laboratory study, Pitts (1969) found that the infusion of lactate ions into individuals highly susceptible to anxiety resulted in anxiety attacks whereas the administration of the same solution to persons

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<sup>1</sup> The autonomic or involuntary system provides stimulation to organs which are generally not under voluntary control. High levels of autonomic nervous system activity are associated with emergency reactions and with vegetative reactions.

with normal susceptibility did not produce anxiety symptoms. Such investigations of the physiological bases of anxiety may materially aid in the development of medical techniques for preventing the onset of anxiety or reducing the intensity of anxiety attacks.

### Behavioral Aspects of Anxiety

Anxiety can generally be identified by observation of an individual's overt behavior. Three types of such behavior used for this purpose are (a) motor activity, (b) defense mechanisms, and (c) responses on anxiety questionnaires. The motor actions considered symptomatic of anxiety are numerous; they include hesitant motoric behavior, fidgeting and other signs of restlessness, nailbiting, trembling, and discoordinated speech. Clearly such behaviors can have origins other than anxiety. Defense mechanisms are attempts by the individual to reduce his level of anxiety. In the discussion that follows reference will be made to the nature of various defense mechanisms, how they serve to reduce anxiety, and their effects on the person's ability to adjust to his environment. Responses on anxiety questionnaires are among the most widely employed means for ascertaining a person's level of anxiety. Anxiety questionnaires and scales are discussed in Chapter III, The Measurement of Anxiety.

### State Anxiety and Trait Anxiety

Spielberger (1966) has presented a conceptual distinction between state anxiety and trait anxiety. State anxiety refers to the temporary experience of anxiety and is characterized by the phrase "anxious now." Trait anxiety refers to a stable elevation in the level of anxiety descriptive of an individual, part of his personality characteristics. It is

characterized by the phrase "anxious person." The terms "state" and "trait" anxiety are roughly equivalent to the term "acute and chronic anxiety," respectively. An additional distinction, that between general anxiety and specific anxiety, is related to the concepts of state and trait anxiety. General, or nonspecific, anxiety exists when a wide variety of stimulus events bring about anxiety. Specific anxiety refers to the condition where only limited classes of stimuli (e.g., tests) are capable of generating anxiety responses.

The interrelationships among these constructs is evident in the observation that a person who is high on trait anxiety more frequently exhibits state anxiety than does someone low on trait anxiety and shows it in a wide variety of situations. High trait anxiety can thus be viewed as a predisposition or tendency to respond to a given situation with anxiety. In other words, high trait anxiety involves both general and specific anxiety, while state anxiety, in the absence of trait anxiety, will usually involve only specific anxiety.

## CHAPTER II

### PSYCHOLOGICAL THEORIES OF ANXIETY

Analysis of anxiety in terms of the levels on which it operates yields information which is mainly descriptive in nature. Numerous theories of anxiety have been developed to provide an integrative framework for viewing the probable causes of anxiety, its mode of operation, and its psychological consequences. Three major theoretical approaches will be discussed: (a) learning (S-R) theory, (b) psychoanalytic theory, and (c) cognitive theory. All three involve principles which give insight into the role of anxiety in school performance and may aid in the development of intervention strategies.

#### Learning (S-R) Theory

The learning theory analysis of the nature of anxiety was developed by Dollard and Miller (1950). It has become particularly influential in recent years. Within this framework, anxiety is viewed as a learned response and as possessing drive properties.

#### Anxiety as a Learned Response

Anxiety is described by Dollard and Miller (1950) as a learned response which is elicited by certain cues or stimuli. These stimuli were once neutral, but have come to elicit anxiety through classical conditioning, i.e., the frequent association of a neutral stimulus with some other stimulus which already induces anxiety or results in pain.

This S-R analysis can be readily applied to the development of test anxiety. When a student first encounters the idea of a test, it is likely to be a neutral stimulus. However, tests are regularly associated

with evaluation. If the student has had experiences of real or perceived failure in evaluation situations at home or in school, then an evaluation will not be neutral. Through classical conditioning, tests will come to elicit the same types of feelings evoked by negative evaluations; they will become stimuli associated with potential failure and will thus induce anxiety. As a stimulus evoking anxiety responses, a test will prompt involuntary nervous system activity and emotional reactions such as lack of concentration, restlessness, and nailbiting (Sarason, I. G., 1958). These responses will tend to interfere with effective performance on tests and other school-related activities. It follows that someone who is high in test anxiety will not be likely to perform as well on achievement tests, intelligence tests, or classroom tests as someone low in test anxiety.

A learning theory concept of particular relevance is stimulus generalization. When a stimulus is conditioned to elicit a given response, then other stimuli which are similar to or associated with the original stimulus come to elicit the same response, though in a somewhat weaker form. In the school setting, if a teacher's tests evoke anxiety responses, it is probable that the teacher, the classroom, and the school building will all become stimuli eliciting attenuated anxiety responses. Minority-group children may face special problems as a result of such stimulus generalization. If, for example, the white policeman on the corner is a stimulus for anxiety responses for a Negro child, the probability may be high that a white teacher will also evoke an anxiety response.

#### Anxiety as a Drive

In learning theory, the effect of anxiety on performance is seen as a result of its drive properties. Spence and Spence (1966) have demonstrated that drives interact with all relevant habit strengths to increase the

reaction potential (the likelihood of emitting a given response) in a multiplicative fashion. Since the relationship is multiplicative, the response with the highest habit strength will receive the greatest increase in reaction potential as a result of an increase in anxiety (or any other drive).

The work of Spence and Spence (1966) and Spielberger (1966c) has important implications for understanding the effect of anxiety on learning. In any given situation, there is a series of potential responses termed a habit hierarchy. A response ranking high in the hierarchy (i.e., of most probable occurrence) is likely to have obtained its position through past learning. The effect of increasing the level of anxiety will be to increase the probability of occurrence of this dominant response at the expense of the alternate responses in the hierarchy. If an incorrect response happens to be high in the hierarchy, then there are task-associated competing responses (i.e., competition between the dominant response and the correct response). Since increasing the level of anxiety will increase the likelihood that the incorrect response will occur, the difficulty of learning accurately the material will be increased. On the other hand, if a correct response is already dominant in the hierarchy, task-associated responses will not be in competition. Under this circumstance, a high level of anxiety will increase the probability of the correct response occurring and will, therefore, aid the learning process. Thus, anxiety has a facilitative effect on performance when there is little response competition and an interfering effect when the level of competition between task and associated behaviors is high.

The analysis by Spence and Spence (1966) has been extended in a manner which appears to have implications for the development of procedures

to compensate for the effects of anxiety in the school setting. Since task-associated competing responses are most likely to be present in complex or difficult tasks, the extent to which anxiety has a debilitating effect on performance will be dependent on the level of difficulty and/or complexity of the task. This has been demonstrated by Spence, Farber, and McFann (1956). Further, learning tasks are typically easier later in practice, and it has been found that the debilitating effects of anxiety diminish over trials (Spielberger and Smith, 1966). (It should be noted that the novelty of a task also decreases over trials, and this may contribute to the lessening of the interference effects.) Therefore, it would appear appropriate to adjust the levels of difficulty and complexity of school tasks and the number of trials provided for a given student, in the light of the level of anxiety under which he generally operates.

According to learning theory, the reduction of anxiety serves to reinforce the behaviors associated with that reduction. Thus, if a student is anxious, studies for a test, and performs well on it, then the studying and the good performance will be associated with the anxiety reduction and will be reinforced. Similarly, if an individual is anxious in school, responds by withdrawing, and has his anxiety level reduced, his withdrawal from active participation in school will be reinforced.

Another learning theory concept of relevance for the school is modeling. Bandura and Walters (1963) found that it is possible to reinforce a subject vicariously by having him observe a model receiving reinforcement. Sarason, et al. (1968) showed that having a subject observe a nonanxious model in a threatening situation tended to reduce the subject's level of anxiety. Both findings offer insight into developing procedures for reducing anxiety in the classroom.



## Psychoanalytic Theory

Freud (1949) noted three major characteristics of anxiety: (a) it has a specific unpleasurable quality, (b) it involves outward manifestations (efferent phenomena), and (c) the individual is aware of both the unpleasurable quality and the efferent phenomena, even though he may not be aware of why he feels anxious. In Freudian or psychoanalytic theory, the origin of anxiety is traced back to the individual's earliest experiences in which he was overwhelmed by an influx of stimuli greater than he was capable of handling at the time. These events are termed "traumatic" and the effect is labeled "traumatic anxiety." Freud believed that everyone has had such events occur during infancy. The birth trauma is considered the prototype of anxiety experiences.

As an individual matures, the increasing capabilities of his ego processes reduce the probability that he will experience traumatic anxiety. The person becomes capable of mastering larger and larger quantities of incoming stimuli and is therefore less likely to be overwhelmed by a sudden influx. Furthermore, the ego acquires the capacity to anticipate the consequences of behavior, particularly the possibility of an action resulting in a traumatic situation. In the presence of stimuli associated with such a danger, the individual experiences "signal anxiety." This is similar in nature but weaker than traumatic anxiety. Signal anxiety alerts one to the possible occurrence of a traumatic experience if he continues the behavioral sequence in which he is engaged. This signal anxiety will continue as long as a potential threat remains. The experience of signal anxiety is uncomfortable, and the individual is motivated to reduce it. The most efficient means for reducing signal anxiety is to terminate the behavioral sequence, which in turn prevents the occurrence of the traumatic event.

The stimuli that serve to trigger signal anxiety are those associated with punishment. In fact, punishment is believed to share many characteristics with trauma. These stimuli may be external, environmental objects or internal, drive-related impulses. Within the psychoanalytic framework, the most important source of socially unacceptable (i.e., punishable) impulses are the sexual and aggressive drives. For example, hostile feelings toward an authority figure--a parent or teacher--could be a stimulus eliciting signal anxiety in a child. His desire to express hostility, his fear of reprisal, and his existing positive feelings toward the adult would be in conflict. The child would continue in a state of anxiety until the hostile feelings were dealt with in such a way as to reduce the likelihood that they would be expressed. Preventing their expression would obviate the possibility of punishment and reduce the signal anxiety.

The various means used to reduce anxiety are termed defense mechanisms. The most important defense mechanism is repression. Repression is the process by which thoughts related to unacceptable impulses are kept out of awareness. It is an unconscious process which works on the basis that, if thoughts about an action are prevented from entering awareness, it is highly improbable that the action will be carried out. Repression is a process which everyone uses to some extent. Its application in all threatening situations could be maladaptive in that action necessary for coping with a specific situation might be repressed. For example, if in academic competition in school a child experiences aggressive impulses toward his classmates and consequent anxiety, he may repress subject-related material in order to avoid academic competition and anxiety.

Using a psychoanalytically-oriented approach, Sarason, et al. (1960) assumed that a child experiences test anxiety only in the presence of the

teacher. They view the teacher as a stimulus associated with punishment in the form of negative evaluations. Since the teacher shares many stimulus properties with the parents, including the role of authority figure, the child may "transfer" the anxiety feelings associated with his parents to his teachers. The significance of a poor performance in school derives from the fact that it symbolizes a negative evaluation by the parents. The tasks for the school are: (a) to identify the stimuli the child associates with unacceptable impulses or with punishment in order to minimize their frequency; and (b) to foster defensive activities which will not interfere with coping processes when anxiety is generated.

#### Cognitive Theories

Cognitive theories of behavior emphasize the conscious thinking and planning capacities of the individual. The work of Atkinson and Feather (1966), Mandler and Watson (1966), and Lazarus (1966) involve the application of this approach to anxiety and its consequences.

Atkinson has developed a theory of motivation in which the concept of anxiety plays an important role. The theory deals with the motivating factors underlying achievement-oriented activity, i.e., behavior which is evaluated in terms of some intrinsic standard of excellence. According to Atkinson, achievement-oriented activity is the result of two opposing tendencies: the tendency to seek success and the tendency to avoid failure. He recognizes that achievement activity is influenced by external rewards and punishments, but emphasizes the role that success-seeking and failure-avoidance play in determining the behavior of the individual.

The tendency to approach an achievement-oriented task ( $T_s$ ) is viewed as a multiplicative function of the motive to achieve success ( $M_s$ ), the

strength of the expectancy of success in the activity ( $P_s$ ), and the incentive value of success at that activity ( $I_s$ ). (The incentive value of success is assumed to vary with the difficulty of the task in accord with the following formula:  $I_s = 1 - P_s$ .) In algebraic form, the function is stated as:  $T_s = M_s \times P_s \times I_s$ .

The relationship expressed by this function carries the following implications: the tendency to approach an achievement-oriented task will be stronger for tasks of intermediate difficulty than for the tasks of high or low difficulty; the strength of this tendency will vary with the strength of the motive to achieve success. Atkinson and Feather (1966a) report substantial experimental support for this hypothesis. Persons high in need achievement prefer tasks of intermediate risk to high or low risk tasks.

Atkinson's theory concerning failure-avoidance runs parallel to that for success-seeking behavior. The tendency to avoid an achievement-oriented task ( $T_f$ ) is viewed as a multiplicative function of the motive to avoid failure ( $M_f$ ), the strength of the expectancy of failure ( $P_f$ ), and the incentive value of failure-avoidance for that activity ( $I_f$ ), where  $I_f = -P_s$ . The easier a task is, the more negative the incentive value of failure. (In algebraic form the equation is:  $T_f = M_f \times P_f \times I_f$ .) This functional relationship generates a hypothesis parallel to the success hypothesis: the tendency to avoid an achievement-oriented task is strongest when a task is of intermediate difficulty and the motive to avoid failure ( $M_f$ ) is relatively strong. It has been demonstrated that persons who are high in fear of failure, and who are constrained to undertake achievement activity, prefer tasks of very high or very low risk.

Atkinson hypothesizes that anxiety is experienced in achievement situations in direct proportion to the magnitude of the tendency to avoid failure. The anxiety is caused by the expectation of a negative outcome on a task. A person will tend to minimize his anxiety by choosing tasks either of low risk or of very high risk. The choice of low risk tasks reduces anxiety because the individual has a very high probability of success. The choice of very high risk tasks, while seemingly paradoxical, serves to reduce the level of anxiety because the incentive value for failure avoidance is minimized. With a low probability for success on the task in the first place, the person will feel he cannot be blamed if he should fail. To the extent that anxiety is present when confronting a specific task, the individual will be motivated to avoid it, and the effect should be to inhibit performance in the situation. In contrast to the learning theorists, who view the decrement in performance as the result of the activation of competing task-irrelevant responses caused by the drive properties of anxiety, Atkinson maintains that the decrement is due to reduced levels of achievement motivation and the individual's attempts to withdraw from the field.

Mandler and Watson (1966) theorized that an interruption of an organized behavioral sequence will, under certain specifiable conditions, evoke anxiety. In their thinking, organized, goal-directed behavior includes both overt, observable activities and cognitive functioning. Interruptions refer to unplanned events which prevent the completion of a sequence. The effect of interruptions is to increase the level of arousal. Following an interruption, the individual can either attempt to return to the original sequence or initiate an alternative behavioral sequence. When no alternative response is available, the person's behavior becomes

disorganized. This disorganization is viewed as a manifestation of anxiety. When the alternative response is maladaptive, anxiety or guilt reactions may also result. The person experiencing guilt will try to reduce it by undoing the wrong action which generated the guilt feeling. However, since the act was completed in the past, undoing it is impossible, and the attempts will be continually interrupted by the reality of the situation. Again, the result will be the disorganization of behavior characteristic of anxiety.

The work of Lazarus (1966) focused on the concept of psychological stress and its consequences, including the phenomenal, physiological stress and behavioral characteristics of anxiety. Psychological stress involves the recognition of a state of threat. Threat occurs when a person anticipates an encounter with a stimulus situation which may result in some form of harm. The identification of a state of threat requires the cognitive process of primary appraisal. An individual must appraise both the stimulus situation and his own physical functioning in order to estimate the degree of threat. The degree of threat is directly proportional to the pressures in the environment and inversely proportional to the person's ability to withstand those pressures.

The approach of threat by an individual sets in motion coping processes that would avoid or minimize the anticipated harm. The selection of a specific coping behavior involves what Lazarus terms "secondary appraisal." Three factors influence secondary appraisal: (a) the degree of threat; (b) situational variables such as the locus of harm, the feasibility of various response alternatives, and constraints on action; and (c) the individual's psychological functioning, including his ego resources, defense mechanisms, attitude structures, and the cost to him of

various coping actions. Both primary and secondary appraisal may take place on either a conscious or an unconscious level.

### Specific Theories of Anxiety

Going beyond broad psychological theorizing, many psychologists have developed specific hypotheses regarding the causes and consequences of anxiety. The following views are drawn from a compendium on anxiety prepared by Spielberger (1966a).

#### Cattell

Cattell states that "...anxiety arises from a threatened deprivation of an anticipated satisfaction when the threat does not carry complete cognitive certainty (p. 47)." Uncertainty is seen as stemming from:

- (a) uncertainty of rewarding mechanisms in the objective world;
- (b) uncertainty of the individual's own impulses, and (c) the individual's cognitive difficulty in appraising both (a) and (b).

#### Izard and Tomkins

Izard and Tomkins view anxiety as a negative affect. It is subsumed under the "fear-terror" affect, one of eight innate affects which they postulate. Izard and Tomkins use the terms "anxiety" and "fear" interchangeably, making no theoretical distinctions between them. Fear usually occurs in conjunction with other affects. Of particular interest is the combination of fear-terror and interest-excitement. When there is an oscillation between anxiety and excitement, the anxiety leading to avoidance and the excitement leading to creativity, one possible outcome is effective, creative functioning.

### Malmo

Malmo discusses the link between pathological anxiety and psychological activation. In pathological anxiety there is a deficiency in homeostatic mechanisms, for example, the normal habituation of blood pressure reactions in response to repeated instances of the same stress situation does not occur. This lack of habituation leads to physiological overreactions to stress and related losses in behavioral efficiency.

### Wolpe

Wolpe takes the position that "...neurotic anxiety is nothing but a conditioned emotional habit... [which involves] a sympathetic-dominated pattern of autonomic response (p.179)." He asserts that the origin of anxiety may, in some instances, be traced to a single, traumatic experience or to recurrent occasions on which pain was associated with some specific stimulus. Wolpe advocated the use of counter-conditioning techniques to extinguish anxiety responses. One procedure, which he strongly recommends, is systematic desensitization through the use of reciprocal inhibition. This involves pairing a response inconsistent with anxiety responses, while the anxiety-producing stimulus is presented. For example, with practice, deep relaxation may be successfully substituted for increased arousal as a response to a stimulus which has generated only minor amounts of anxiety. By gradually progressing to related stimuli, more and more closely resembling the situations triggering intense reactions, Wolpe has successfully treated individuals with strong phobias.



## An Integrative Summary of the Viewpoints on Anxiety

While the anxiety theories discussed deal with somewhat different sets of variables and concepts, their formulations converge on the following points:

1. Anxiety is manifested on physiological, phenomenological, and behavioral levels. In a given individual, discrepancies among the expressions of anxiety on these different levels may be attributed, in part, to the person's defensive operations.
2. There are two broad categories of anxiety: (a) "state" or "acute" anxiety and (b) "trait" or "chronic" anxiety. Trait anxiety refers to the level of anxiety which generally characterizes the individual and the probability that he will respond to a variety of situations with a sharp increase in anxiety. State anxiety refers to whether the person is intensely anxious at some particular time.
3. Anxiety is elicited by psychological stress. Anxiety can result from a variety of stressful conditions including the threatened deprivation of an anticipated satisfaction, the interruption of an ongoing behavioral sequence, uncertainty concerning the outcomes of external (environmental) and internal (cognitive) events, or the potential implementation of socially unacceptable impulses.
4. Anxiety reactions to stress usually occur in conjunction with other reactions to stress, including various emotional responses, defense mechanisms, and coping behaviors.

5. The consequences of anxiety are most likely to be disruptive, to interfere with organized behavior patterns, and to have a debilitating effect on learning efficiency. However, under certain definable circumstances, anxiety may facilitate learning and bring about effective adaptation and/or performance.

## Chapter III

### THE MEASUREMENT OF ANXIETY

To test the hypotheses derived from various theories of anxiety, adequate measures of anxiety levels are needed. Since physiological measures of anxiety are awkward to obtain, and since no physiological indices are specific to anxiety to the exclusion of other emotions, much effort has been devoted to the development of paper and pencil questionnaires on anxiety. These anxiety scales have the advantages of being convenient to administer and simple to score. However, responses may be influenced by factors other than anxiety. The most important of these factors are social desirability and defensiveness response sets. Several specialized scales have been developed to identify the operation of these variables. Because of the effects of such response sets, and for other reasons, the utility of paper and pencil measures of anxiety is limited to group testing situations; they cannot be used effectively with individual children as diagnostic devices. A more complete discussion of the limitations inherent in such measures and the problems arising from their use is presented in appendix 1.

A general review of the various questionnaires used to measure anxiety has been prepared by Levitt (1967). Only those scales used extensively in research in school settings will be discussed here. These scales can be divided into two categories: (a) those purporting to measure general anxiety levels and (b) those assumed to be measuring anxiety associated with specific aspects of the school environment. Copies of all of the anxiety scales cited are contained in appendix 2.

## Measures of General Anxiety

### Manifest Anxiety Scale (MAS)

The MAS was developed by Taylor (1953) to assess stable predispositions to react with anxiety to stressful situations. It was intended as a measure of general drive rather than fluctuating anxiety levels, i.e., as an index of trait, as opposed to state, anxiety. The scale consists of 50 true-false items appropriate for use with high school students and adults. The questions fall into five categories which deal with (1) physiological disorders, (2) general emotionality, (3) the direct admission of worry or nervousness, (4) physiological stress, and (5) self-consciousness and self-confidence. The MAS has been validated as a measure of anxiety through its effectiveness in differentiating psychiatric patients from normals. It has been validated as a measure of general drive through the confirmation of a hypothesized interaction between MAS scores and performance on simple and complex paired-associates learning tasks (Spence, Farber, and McFann, 1956).

### Children's Manifest Anxiety Scale (CMAS)

The CMAS, developed by Casteneda, McCandless, and Palermo (1956), is an adaptation of the MAS appropriate for use with elementary school children. The scale consists of 42 anxiety items and 11 items which provide an index of the subject's tendency to falsify his responses. The anxiety items can be grouped into roughly the same five categories as those in the MAS. Like the MAS, the CMAS is regarded as a measure of a generalized state of anxiety. Interaction effects between CMAS scores and performance on tasks of differing levels of difficulty have been reported by a number of researchers (Casteneda, McCandless, and Palermo,

1956; Sarason, Davidson, Lighthall, Waite, and Ruebush, 1960).

#### General Anxiety Scale for Children (GASC)

The GASC was developed by Sarason, et al. (1960). It consists of 34 yes-no items dealing with a variety of concerns, none of which are related to school settings. Eleven additional items assess the respondent's honesty. Like the MAS and the CMAS, the GASC is intended to measure trait anxiety.

#### Affect Adjective Check List (AACL)

The AACL, developed by Zuckerman (1960), consists of a number of adjectives which a person may use to describe his current mood state. Twenty-one adjectives relate directly to anxiety reactions (e.g., nervous, tense) and are scored in the anxiety direction if checked. Ten contrasting items (e.g., calm, secure) are scored in the anxiety direction if they are not checked. The AACL is intended for use in assessing fluctuations in a person's anxiety level at different points in time; it is thus a measure of state anxiety.

#### Measures of Anxiety Associated with Specific Aspects of the School Setting

#### Test Anxiety Scale (TAS)

The TAS was developed by Mandler and Sarason (1952) to measure anxiety associated with classroom exams and intelligence tests. Each of the 35 items is answered by the respondents placing a check mark on a 15 cm. horizontal line, with the end points labelled "Worry a lot" and "Worry not at all." The order of these designations is sometimes alternated, presumably to promote attention to each item and to counteract response set. Significant negative correlations have been found between TAS scores

and scores on aptitude tests, but not with course grades (S.B. Sarason and Mandler, 1952; I. G. Sarason, 1957; and S. B. Sarason, 1961). I.G. Sarason (1963) reported correlations ranging from -0.20 to -0.55 between TAS scores and the academic performance of high school students. Leibert and Morris (1967) did a factor analysis of the TAS and reported two orthogonal factors: worry (lack of confidence) and emotionality (physiological activity).

#### Test Anxiety Scale for Children (TASC)

The TASC, developed by Sarason, et al. (1960), is composed of 30 yes-no questions dealing with the child's feelings about his class performance, tests, and about how he compares with other members of his class. It is intended for use with children in grades 1 through 6. Sarason, et al. (1960) reported several studies which indicated that pupils with high TASC scores performed more poorly on test-like tasks than did children with low TASC scores; these results did not hold for game-like tasks. In factor-analytic studies of the TASC, Dunn (1965) and Feld and Lewis (1967) identified four factors which held up across age and sex: (a) test anxiety; (b) somatic signs of anxiety; (c) negative self-evaluation; and (d) remote school concerns.

#### Test Anxiety Scale for Children as Modified by Morse, Bloom, and Dunn (TASC m)

Dunn (1965) reported on the modification of the TASC based on the results of factor analytic research. The TASC m permits more specific identification of the nature of the anxiety experiences which characterize the respondent.

#### School Anxiety Scale (SAS)

The SAS, developed by Phillips (1966a), makes use of items from the TASC, the Achievement Anxiety Scale, the Audience Anxiety Scale, and other

personality instruments. It was designed to assess anxiety associated with a broader range of stressful school situations than is encompassed by the Sarason scales. A factor analysis of the SAS revealed four factors which roughly parallel those found for the TASC: (a) fear of taking tests; (b) physiological reactivity associated with a low tolerance for stress; (c) lack of confidence in meeting the expectations of others, particularly teachers; and (d) fear of negative evaluation by others, particularly in public performances. Fewer items in the SAS load on the "test anxiety factor" than was the case for the TASC. Phillips reported that the SAS correlates positively with the Proneness toward Neuroticism subscale of the Children's Personality Questionnaire.

#### Problems with the Measurement of Anxiety

Because paper and pencil tests for anxiety are self-report devices, their results may reflect deliberate or unconscious faking. As already mentioned, the CMAS and the GASC include "lie" scales, while other scales for measuring social desirability response sets have been developed by Edwards (1957) and Crandell, Crandell, and Katkovsky (1965). These scales consist of items to which very few individuals can honestly give socially desirable responses. A very high score on such a scale implies that the respondent has given a false impression of himself on a personality scale. Two hypotheses are offered to explain falsification on personality scale. According to the defensiveness hypothesis, a person selects the socially desirable response because to do otherwise would force him to become aware of unacceptable aspects of his behavior. The alternative, need-for-approval hypothesis, views socially desirable responding as an attempt to win social approval by presenting oneself in the most favorable light

possible. Whichever hypothesis is accepted, it follows that a person with a strong tendency to give socially desirable responses will check those items on anxiety scales which are considered socially desirable, i.e., those associated with low levels of anxiety.

Numerous studies have been made of the relationships between anxiety scales and lie and social desirability scales. Sarason, et al. (1960) reported consistently significant negative correlations between the TASC and its lie scale and between the TASC and the GASC lies scale. The correlations of the CMAS lie scale with the GASC and the TASC are generally low and non-significant. This implies that the CMAS lie scale and the GASC lie scale are tapping different traits. Sarason (1959, 1961c) found significant negative correlations between the MAS and the Edwards Social Desirability Scale. Somewhat smaller negative correlations were found between the Edward's scale and TAS scores (Sarason, 1961, 1969). Because anxiety scores may be confounded by social desirability response sets, it becomes necessary to differentiate between individuals with low anxiety scores and low response set scores and those with low anxiety scores and high response set scores. Sarason has handled this problem by dropping from his studies subjects with high lie scale scores. O'Reilly and Wightman have (in press) proposed weighting anxiety scores and response set scores to procure adjusted anxiety scores for all subjects. They demonstrated that the use of adjusted anxiety scores increases the efficiency of the TASC in predicting I.Q. and academic achievement. Because the procedure they suggest can easily be applied by researchers working with anxiety scales, a report of their work is presented in appendix 3.

As noted previously, caution should be exercised in the use of paper and pencil measures of anxiety. While anxiety scales have proven very



productive in identifying groups of high anxious and low anxious subjects for research purposes, they were not intended for use in individual diagnosis and should not be taken as a basis for decision-making regarding specific interventions. Moreover, because results vary greatly when the tests are administered to the same individual on different occasions and because responses are influenced by many extraneous factors, scores on anxiety scales should not be entered in a student's permanent record. In addition, the administering of any psychological test raises questions about the invasion of privacy, and for this reason it is necessary to obtain the informed consent of the persons legally responsible for the child before such scales are administered for any purpose. (See Willingham, 1967, for a complete discussion of the problem of invasion of privacy in research and testing.)

While anxiety scales are inappropriate for individual diagnosis, they do have a place in the school program. Most importantly, anxiety questionnaires, along with other psychological instruments, can aid in assessing the general mental health climate within a school. By testing the student body periodically over the years with scales measuring both general trait and test anxiety it may be possible to identify teachers whose classes generally show high levels of anxiety. It is best if the anxiety scales are administered by someone other than the teacher and if the respondents remain anonymous.

The psychological effects of different teaching techniques and curricula can be ascertained by comparing the anxiety scale scores of children exposed to various instructional conditions. Measures of both state and trait anxiety may be appropriate in this context. Again the need for repeated assessments must be emphasized, since differences found between

groups on a single occasion may reflect nothing more than the effect of pupil assignments. This particular problem is likely to occur with some frequency, since students are not generally assigned to classes in a random fashion. When findings are stable over several different groups of children, the results will almost definitely reflect genuine differences between teachers, courses, or teaching techniques.

In all cases, the design and evaluation of research programs employing psychological tests and questionnaires should be carried out in consultation with a school psychologist or another professional trained in psychological research.

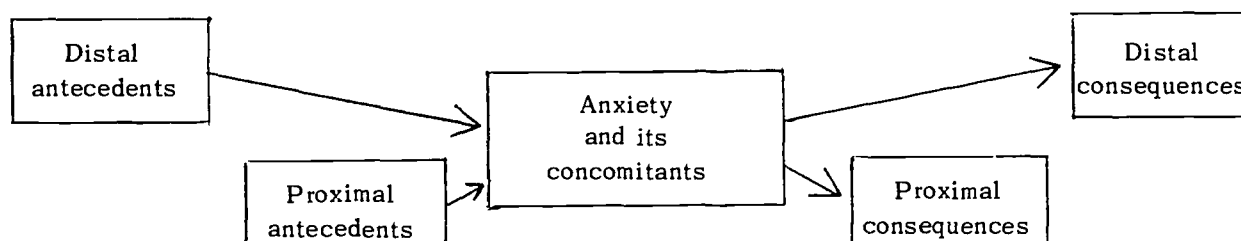
## CHAPTER IV

### A SELECTIVE REVIEW OF RESEARCH ON ANXIETY

#### A Paradigm for the Review of Anxiety Research

To facilitate discussion of the voluminous research on anxiety, a paradigm was developed incorporating the major variables relating to anxiety. These variables are classified into three broad groupings: (a) antecedents of anxiety, (b) concomitants of anxiety, and (c) consequences of anxiety. Both the antecedents and consequences are further differentiated as distal and proximal in accord with the classification system originated by Brunswik (1951). The term "proximal" refers to occurrences having a close temporal association with the behavioral event under study. The term "distal" refers to events occurring at a more remote point in time. The relationships between the different classes of variables in the paradigm are presented in figure 1. The various factors are discussed below in the order of their occurrence in the model.

Figure 1. A Paradigm for the Analysis of the Antecedents, Concomitants and Consequences of Anxiety



### Distal Antecedents of Anxiety

Distal (remote in time) antecedents of anxiety are organismic and environmental factors which contribute indirectly to the experience of anxiety. They contribute "indirectly" in the sense that they occur in the early years of a person's life but continue to exert an influence on his behavior. Distal antecedents include:

1. Sex and masculinity-femininity
2. Racial, ethnic, and social-class status
3. Parent-child and other familial relationships
4. Birth order
5. Early school experience

### Proximal Antecedents of Anxiety

Proximal antecedents of anxiety are factors which are immediately and directly involved in triggering the anxiety experience. These variables may be either situational factors in the environment or personal factors within the individual. Included here are:

1. Psychological stress
2. Modeling
3. Personality variables

### Concomitants of Anxiety

Concomitants of anxiety are phenomenological, physiological, and behavioral activities which generally accompany the experience of anxiety but which are not necessarily among its defining characteristics. Since definitions of anxiety vary, some of the variables listed as concomitants in this paper may be identified elsewhere as central characteristics. The distinction between a concomitant and a consequence of anxiety is, in some

instances, arbitrary. In general, an individual's immediate behaviors are classed as concomitants while his adjustments to a situation are considered consequences.

### Consequents of Anxiety

The proximal consequences of anxiety are the effects anxiety has upon the immediate behavior of the individual experiencing it. The distal consequences of anxiety include effects that are of extended duration, effects that first occur long after the termination of anxiety, and effects that appear in a variety of situations. Many distal consequences are the cumulative effects of repeated anxiety experiences. Both proximal and distal consequents are evidenced in two important areas of behavior:

1. Social behavior
2. Intellectual functioning

### Research on Distal Antecedents of Anxiety

#### Sex and Masculinity - Femininity

Differences between the anxiety levels of boys and girls have been consistently found on questionnaires, with girls generally indicating greater anxiety (Ruebush, 1963). Girls scored higher on measures of general anxiety (Castenada, McCandless, & Palermo, 1956; Phillips, 1962); test anxiety (Sarason, et al., 1960; Forbes, 1969), and school anxiety (Phillips, 1966a). Sex differences tend to be more pronounced in lower-class and minority groups as shown by school anxiety results among Negroes and Mexican-Americans (Phillips, et al., 1969)

Sex differences have not been found for all aspects of anxiety. Phillips, et al. (1969) failed to find any difference between boys and girls on one factor of the School Anxiety Scale: Lack of Confidence in Meeting

the Expectations of Others. There was, however, an interaction between sex and minority group status: white boys yielded higher scores on the confidence factor than did white girls, while among Negroes and Mexican-Americans, girls had higher scores than boys.

As noted, the generally higher anxiety levels for girls were obtained with paper and pencil tests. It is possible that these results do not reflect a genuine difference in anxiety level between the sexes, but rather a difference in the willingness to admit to anxiety symptoms. Sarason, et al. (1960) have suggested that boys are more defensive in responding to anxiety scales than girls because manifestations of anxiety are more ego-alien for them than for girls. Support for this defensiveness hypothesis is provided in studies by Hill (1963) and Lighthall (1963) in which boys were found to have higher defensiveness scores, e.g., they were less willing to admit to common feelings and faults. Further support is derived from the results of projective measures of anxiety which presumably are less subject to defensiveness (Phillips, 1966c). Phillips, et al. (1969) suggest that another possible basis for the obtained sex differences may be the fact that girls are more acquiescent than boys.

The complexity of sex differences in anxiety is indicated by the differential significance of anxiety in the behavior of boys and girls. For example, Lekarczyk and Hill (1969) found significantly more inadequate personality functioning in boys with high test anxiety than in high anxious girls. Sarason (1963) found significant differences between boys and girls in the correlation of anxiety with performance on the SCAT. For boys the correlation was +0.55 and for girls it was -0.27.

Fischer (1969) found that high anxious boys showed more maladaptive behavior than high anxious girls. Even among low anxious students, boys

were more likely to show maladaptive behavior. Some boys who scored low on the anxiety measures may have been using defense mechanisms extensively to prevent the expression of anxiety.

Using a games-preference inventory to assess masculinity - femininity, Sutton-Smith and Rosenberg (1960) found that the game choices of high anxious boys were more feminine and immature than those of low anxious boys. High anxious and low anxious girls were not significantly different with respect to the appropriateness of their game choices. Gotts and Phillips (1968), using the School Anxiety Scale, found a highly significant negative relationship between masculinity-femininity and anxiety in boys ( $r = -0.44$ ); masculinity-femininity and anxiety were unrelated in girls ( $r = -.04$ ). Finally, Sutton-Smith and Rosenberg (1965) found that, among 10-year-olds, anxiety is greater for those with inappropriate sex-role characteristics. Taken together, these results suggest that the report of high levels of anxiety on questionnaires by boys may be due, in part, to a failure to develop appropriate sex-typed behaviors.

In summary, sex differences in the level of anxiety, and in the relationship between anxiety and personality functioning, can be attributed in part to defensiveness on the part of boys in admitting to anxiety. For boys, such admissions would be deemed socially inappropriate and unmasculine. For girls, the admission or nonadmission of anxiety carries no implications regarding their femininity (Sarason, et al., 1960). Thus, it can be hypothesized that the adequacy of a boy's identification with the masculine sex role should be negatively related to the levels of anxiety he reports, while no corresponding relationship should obtain for girls.

### Racial, Ethnic, and Social-Class Status

Several studies indicate that anxiety levels are related to socio-economic status and minority group membership. Lower-class children generally reveal higher anxiety scale scores than do middle-class children (Dunn, 1968; Hawkes & Koff, 1969). Lower-class youngsters with minority group status have been found to have consistently higher levels of anxiety than other lower-class children (Phillips, 1966a; Tseng & Thompson, 1969). Further, lower-class Negro and Mexican-American children have higher anxiety scores even when the effects of defensiveness and other coping-style variables are partialled out (Phillips, et al., 1969).

The observed class differences in anxiety levels may be related to differences in the defense and coping styles of lower- and middle-class groups. Miller and Swanson (1960) reported that children in the lower socio-economic class utilized more primitive defenses, such as regression and denial, than did middle-class children. In a longitudinal study of adolescents, Weinstock (1967a) found that higher social class status was negatively related to primitive mechanisms (e.g., denial) and positively related to the use of advanced defense mechanisms (e.g., projection and intellectualization). Thus, the higher anxiety of lower-class children may be partly attributable to the inadequacy of their defenses and coping mechanisms.

Children in different socio-economic classes are exposed to different parental behavior patterns. Maas (1951) reported that the parents of disadvantaged children communicate less openly. Their discipline relies more on external control than on causal thinking and internal control (Kohn,



1959; Kohn & Carroll, 1960). The home environment of the disadvantaged is quite different from the school environment, where communication and internal controls are highly valued. This discrepancy may be an important factor in the development of school anxiety in the disadvantaged.

Katz (1968a) contended that minority group parents place inordinate demands on their children for academic achievement, but do not follow through with encouraging actions that might increase the likelihood of successful performance. Wylie and Hutchins (1967), in a study of 7-12-year-olds, generally supported Katz's contention: they noted that Negro parents encouraged pursuit of high aspirations but were not usually very effective in helping their children. These findings suggest that the achievement motives of minority group children may be stronger than generally thought, and that the usual thwarting of these motives may account in part for the higher levels of school anxiety found among minority-group and lower-class children.

Katz (1968b) has also noted that "...debilitating anxiety in minority group students may be more a function of perceived isolation and exclusion from the main American opportunity structure than awareness of one's intellectual limitations (p. 65)." Schachter (1959) has postulated that social isolation produces anxiety and that one of the consequences of experiencing an anxiety-producing situation is a heightened tendency to seek affiliative relationships. If Katz is correct, minority group children are not only isolated and excluded from American society in general but are also cut off from one of the major avenues for relieving anxiety -- the opportunity for expressing affiliative need through interpersonal relationships.

### Parent-Child and Other Familial Relationships

Sarason, et al. (1960), using a psychoanalytic approach, studied the families of high and low test anxious children and found a number of differences in the parental handling of evaluative situations. Adams and Sarason (1963) reported that children's anxiety scores were more closely related to mothers' anxiety scores than to fathers' anxiety scores. In a study by Smith (1969), the parents of fourth- and fifth-grade boys with high test anxiety placed a greater value on independence, assertiveness, and pride of accomplishment than did the parents of low test-anxious boys. It can be conjectured that the high test anxious boys tended to display dependent behavior, lack of assertiveness, and an avoidance reaction in achievement situations and that their parents were reacting to this. The behavior patterns of the parents would thus be a consequence of the child's expression of test anxiety rather than a causal factor. More information on this interaction would be helpful as a basis for planning intervention strategies.

### Birth Order

The data available on the relationship between birth order and anxiety do not yield a consistent pattern. Sarason (1969) found no direct relationship between these variables but did find that ordinal position interacted with test conditions to affect anxiety level. Sampson and Hancock (1967), in a particularly well-designed study, found first-born high school students to have lower test anxiety. In contrast, however, Phillips, et al. (1969) reported no differences in the school anxiety of first-born and later-born fourth graders.

### Early School Experience

In a study of elementary school children, Phillips (1967) found that basal reading level in the first grade had a correlation of  $-.49$  with school anxiety for girls in fourth grade and a correlation of  $-.36$  for Negroes and Mexican-American children in fourth grade. Teacher grades for conduct in the first grade, on the other hand, correlated  $+.43$  with the school anxiety of the girls in the fourth grade. These and other results for grades 1-3 suggest that early school experiences are important in the development of anxiety. However, it should be noted that these indices were generally better predictors of school anxiety for white children than for Negro and Mexican-American children, and for girls as compared to boys. A finding of generally high stability for test anxiety scores over the elementary school years by Hill and Sarason (1966) also attests to the importance of early school experiences in the development of anxiety.

### Research on Proximal Antecedents of Anxiety

#### Psychological Stress

The concept of psychological stress is fundamental to Spielberger's (1966) analysis of trait and state anxieties. An individual who is prone to giving anxiety responses (high trait anxiety) does not react with anxiety to all environmental stimuli. Only in situations engendering psychological stress will he manifest high anxiety. A person low on trait anxiety will also show situational or state anxiety in the presence of psychological stress. What is different in the two cases is the nature

of the environmental events which are appraised as threatening and which therefore give rise to the experience of psychological stress. A person high on trait anxiety evaluates more situations as threatening than does a person low on trait anxiety. Less environmental pressure is required for him to label a situation as threatening. A considerable amount of psychological research has been directed toward identifying those situations which are likely to result in the experience of psychological stress.

One of the best documented means for inducing psychological stress is the use of ego-involving task instructions (Denny, 1966; Nicholson, 1958; Sarason, 1956, 1957, 1961b; Sarason and Palola, 1960; and Spielberger and Smith, 1966). This involves informing the subject that his performance on a task is a reflection of his intellectual ability or his probable success in school or later life. It is assumed that such instructions tend to increase the subject's involvement in the task and his concern about the adequacy of his performance. While, as noted above, numerous studies have shown that the use of ego-involving instructions does increase the individual's level of psychological stress, at least two studies have failed to support this hypothesis (Sarason and Harmatz, 1965; and Sarason and Minard, 1962).

Spence and Spence (1966) have observed that most testing situations are inherently ego-involving because of their uses for evaluation, comparison, and planning the student's program. Moreover, since the instructions accompanying them are implicitly ego-involving, classroom tests are a source of stress to which school children are regularly exposed. The frequency of testing can thus be expected to be a variable that should be directly related to stress reactions. Proger, Mann, Taylor, and Morrell

(1969) have demonstrated that daily testing does, in fact, produce significantly more stress than does less frequent testing. While the modification of test instructions may succeed in alleviating stress, as Lekarczyk and Hill (1969) have demonstrated with "game" instructions, it is unlikely that this practice would prove a viable long-term solution to the problem of test anxiety.

Another important element in the relationship between tests and psychological stress is the possibility of failure. Failure situations are generally labelled as threatening. Various studies in which failure has been induced or subjects have been given false knowledge of results indicating failure have shown that such experiences do result in psychological stress (Gordon and Berlyne, 1954; Lucas, 1952; Marlett and Watson, 1968; and Sarason, 1956, 1957a; and Walker, 1961). Since school evaluations cannot be eliminated, the possibilities for failure cannot be removed. Under such circumstances it becomes necessary to develop intervention procedures designed to help students cope with such stress rather than try to provide them means to avoid it.

There does not appear to be any limit to the range of stimuli that can be labelled as potentially threatening. Endler and Hunt (1969) discuss ways in which both interpersonal situations and inanimate objects come to take on stress inducing properties. Even the ambiguities in how an individual structures a situation can be viewed as threatening.

It appears that the construct of psychological stress serves mainly as a mediating variable between environmental stimuli and anxiety responses. Identifying a situation as stressful means only that anxiety is a probable response to it. However, while psychological stress may be a universal

antecedent of anxiety, behaviors other than anxiety (e.g., coping activities) may be responses to such stress. Therefore, one potentially fruitful approach to the development of intervention procedures may be focused on changing the probability of anxiety and coping responses under stressful conditions.

### Modeling

Another situational variable that may affect a person's anxiety level is the availability of anxious models. The studies of Bandura and Walters (1963) on aggression and Yando and Kagan (1968) on impulsivity have demonstrated that children tend to imitate the behaviors of the authority figures to whom they are exposed. While little research has been conducted on the modeling of anxious behavior, it seems likely that it also occurs. In a research setting, Winkel and Sarason (1964) found an interaction between the anxiety level of the experimenter and the stressfulness of task instructions as shown by their effects on subjects' performance on a serial learning task. If classroom teachers evidence high levels of anxiety, they may be serving as models for inducing similar behavior in their students. Specific research along this line would be desirable.

### Personality Variables

The personality configurations which distinguish between those people who respond to a stressful situation with anxiety and those who do not, constitute an important type of antecedent factor. One personality variable, important in this respect, is the type of motivation which is relevant to the individual. Since anxiety is most likely to be manifested under conditions where an important motive is thwarted, two individuals with different motivational systems may respond very differently to the

interruption of a specific activity. The concept of individual differences in motivation plays a part in Sarason's suggestion (1961a) that for high anxious subjects, the use of ego-involving instructions which emphasize personality factors may yield different results than will the use of ego-involving instructions emphasizing intelligence. Spence and Spence (1966) concur with Sarason's supposition, but, unfortunately, do not indicate what aspects of personality should be emphasized in task instructions to maximize performance.

Another means by which personality may affect the level of anxiety manifested involves the construct of "self-concept." Ruebush (1963) reported that two aspects of self-concept, self disparagement and feelings of inferiority, have been consistently related to anxiety. Both Rosenberg (1962) and Suinn and Hill (1964) found substantial negative correlations between self-acceptance and anxiety scores. A study by Phillips, Hindsman, and Jennings (1960) using seventh grade subjects revealed that dissatisfaction with oneself in social activities had a higher correlation with anxiety level (+ .60) than did dissatisfaction with oneself in relation to school (+ .32); both correlations were significant. Another study by Phillips, Hingsman, and McGuire (1960) found that, among adolescents, anxiety was associated with the following aspects of self-concept: guilt feelings and self criticism, frustration associated with generalized aggressiveness, feelings of school inadequacy associated with hostility toward school, general criticalness of age-mates, and, for boys only, lack of aggressive self-assuredness.

Finally, the nature of the individual's characteristic defense mechanisms will determine, in part, the level of anxiety manifested in his behavior. For example, Golin, et al. (1967) reported a correlation of

+ .87 between scores on the Manifest Anxiety Scale and scores on the Repression-Sensitization Scale developed by Byrne (1964) to measure a dimension of defensive behavior (high scores on this scale reflect sensitization). Repressors report lower levels of anxiety and show longer latencies in the perception of threat, a greater tendency to deny failure, and a greater tendency to forget disturbing events than do sensitizers. It must be recognized that these differences do not necessarily mean that there are true differences in anxiety levels but only that there are differences in the ways anxiety is reflected in psychological test-taking and verbal reporting. Lazarus and Alfert (1964) have suggested that when some specific set of stress conditions are amenable to particular types of defensive efforts, such as denial or intellectualization, then individuals for whom these are characteristic defenses will have little difficulty in handling that stress. Individuals with characteristic defenses less appropriate for coping with that set of stress conditions would be expected to evidence high levels of anxiety.

#### Research on the Concomitants of Anxiety

As previously noted, a problem exists as to what can properly be termed a concomitant of anxiety since making the distinction between what merely accompanies anxiety behaviors and what results from them is a matter of judgment. Perhaps the most important question about the concomitants of anxiety concerns the relationships among various aspects of anxiety itself--the subjective, the behavioral, and the physiological. Do these components generally occur together, or are they alternative modes for reacting to psychological stress? Unfortunately, the data on this point are far from conclusive.



On the relationship between physiological measures and paper and pencil measures of anxiety (a behavioral index), there are conflicting findings. Haywood and Spielberger (1968) found good agreement between Manifest Anxiety Scale scores and the Palmar Sweat Index (a measure of skin conductance) while Raphelson (1957) found that MAS scores did not relate to skin conductance. However, Raphelson did find that test anxiety was related to skin conductance when a complex perceptual motor task was administered with ego-involving instructions. Folkins, et al. (1968) found that subjects reporting the most anxiety on an adjective check list did not show the expected performance on heart rate measures.

Studies of anxiety ratings by clinicians and anxiety test scores also present contradictions. Cattell and Scheier (1961) reported good correlations between these two types of measures. However, when Miller, Fisher, and Ladd (1967) studied (a) ratings of patient anxiety by psychotherapists and psychiatric students, (b) test scores from the MAS, the Welsh Anxiety Scale, and the Psychasthenia scale (all anxiety measures derived from the MMPI), and (c) the patient's self-report of anxiety, they found no significant relationships between the staff ratings and the test scores. It is this failure to find the expected inter-relationships between different types of indices, all of which are supposed to measure the same phenomena, that poses one of the most serious problems for psychological research in the field of anxiety.

A number of other variables that have been viewed as possible concomitants of anxiety are an acquiescence response set, hypnotizability, and daydreaming. The acquiescence response set refers to the tendency of a person to agree with, or say "yes" to, any statement regardless of content. Chase and Sassenrath (1967) found that in college student populations,

high anxious subjects showed significantly more yea-saying bias than did low anxious subjects. Feder (1967) found a correlation of + .37 between acquiescence set and the Repression-Sensitization Scale (the R-S scale correlates highly with anxiety scales). However, Golin, et al. (1967) found a nonsignificant difference between R-S scores and acquiescence and a nonsignificant difference between MAS scores and acquiescence as well.

With regard to hypnotizability, Levitt, Brady, and Lubin (1965) found that female subjects who evidenced an ability to resist hypnotic induction had higher anxiety scores than did subjects who were extremely susceptible to hypnosis. Hilgard (1965) reported data consistent with the Levitt, et al. finding.

Several researchers have reported that persons high on anxiety tend to daydream more frequently than do persons low on anxiety (Reiter, 1963; Singer and Schonbar, 1961; and Singer and Rowe, 1962). This relationship points up the problem of distinguishing between the concomitants and the consequences of anxiety. It may be that wish-fulfilling fantasies representing alternative situations to the one arousing anxiety, are one of the elements of an anxiety state. On the other hand, daydreaming may reflect an attempt at coping with anxiety by forcing the threatening material from consciousness and reducing, at least temporarily, the person's anxiety level. In either case, daydreaming is likely to interfere with the individual's functioning.

#### Research on the Consequents of Anxiety

While the discussion of the antecedents of anxiety was divided into material on distal and proximal antecedents, the discussion of consequents

will not be similarly divided because both proximal and distal consequents are found in the same area of behavior and cannot be clearly separated. The areas in which the major consequents occur are social behavior and intellectual functioning.

Two methodological approaches have been extensively used in studying the effects of anxiety. The first involves comparing the performance of high and low anxiety subjects in a variety of situations. The second involves inducing high anxiety in one group of subjects while not manipulating the anxiety of another group and then testing for behavior differences. The most frequently used procedures for inducing anxiety are giving ego-involving instructions or experimentally manipulating failure. A third possible technique involves the use of naturalistic stress in place of artificially induced anxiety.

#### Social behavior

Sarason, et al. (1960) discuss the relationship between test anxiety and student responses to evaluative situations. It appears that children who experience anxiety in evaluative situations are reacting with strong unconscious hostility to the evaluators whom they believe are, or will be, in some way passing judgment on their adequacy. This hostility is in conflict with their dependency needs and is not openly expressed but is frequently turned against the self in the form of self-derogatory attitudes. (In some circumstances, the hostility may be overtly directed at others, i.e., teachers, parents, and peers.) The self-derogation strengthens the child's expectation of failure and his desire to escape evaluative situations and results in impairment of intellectual functioning. In most instances, the origins of the hostility are early family experi-

ences in which behavior and achievements were unfavorably evaluated by parents, and in which children were frequently punished for failure to meet parental standards. In the early school years, the behavior of these self-derogatory children in school situations is frequently described as dependent, direction-seeking, and conforming, and, occasionally, as markedly unresponsive (Sarason, 1966).

Sarason (1966) believes that few high anxious children overtly behave in a hostile and aggressive manner. It is his impression that when they are hostile and aggressive it is because dependent behaviors have not been successful. However, in a recent 2-year study, Phillips, et al. (1966) obtained significant relationships between school anxiety and hostile and aggressive behavior in school as observed by teachers. The incidence of aggressive classroom behavior was greater among high anxious boys than high anxious girls, and low anxious girls displayed more adaptive behavior than low anxious boys.

A number of factors may account for the contrast between the Sarason, the Phillips, and the Fischer findings. First, it can be argued that differences in sex role socialization make hostile and aggressive behavior by boys more acceptable and more effective. Second, as McClelland (1951) has observed, aggression acts in some way to reduce anxiety. Finally, differences in group values may result in different behaviors. Sarason's sample of children appears to have been largely middle-class and white, whereas the sample in the study by Phillips and his colleagues contained a substantial number of Negroes and Mexican-Americans. Among the latter, aggression is probably more tolerated and rewarding and is, therefore, more successful in reducing or avoiding the experience of anxiety.

One of the first studies of the relation of anxiety to sociometric

status was done by McCandless, Castenada, and Palermo (1956). They found that among middle-class elementary school children anxiety was negatively related to peer status. In another study Hill (1963) analyzed the relation of test anxiety and defensiveness to sociometric status in third graders from mostly working class homes. He found that boys' ratings of girls, and girls' ratings of boys were much more highly related to anxiety and defensiveness than were boys' ratings of boys and girls' ratings of girls. Hill also reported that defensiveness, as an operating factor in personality, was more important for girls, while anxiety was more important for boys. Hill's findings agree with observations made by Sarason, et al. (1960). The evidence indicates complex relationships between anxiety levels and sociometric peer status which are not easily explained.

Boward (1959) hypothesized that vulnerability to stress depends on the social environment, and that social isolation increases vulnerability to stress. Kissel (1965) supported the view that the desire to affiliate under stress is a direct result of the anxiety-reducing properties of social stimuli. The socially isolated and rejected person is denied opportunity for affiliation and thus becomes more anxious. Walters and Karal (1960) found that social isolation leads to increased susceptibility to social influence only if the experience of isolation is accompanied by anxiety. In two related studies, Walters and Ray (1960) reported that anxiety increases the effectiveness of social reinforcers in the conditioning of young children, and Walters, Marshall, and Shooter (1960) found that high anxious subjects were more likely to conform to the judgments of an experimenter in an autokinetic situation. In this latter study, using college students, the correlation between the effects of

fear or anxiety and conformity was  $+0.67$ . Conformity is an instance of dependency behavior, and dependency responses are increased by anxiety. Commons (1962) studied social isolation in second graders, utilizing sociometric status, and found differences in sex role, in certainty in interpersonal relations, and in ability to communicate verbally. He pointed out that his results lend support to Sullivan's (1953) theories concerning social isolation in the early years.

The theoretical views and empirical results on anxiety suggest the paradigm presented in Figure 2. Anxiety is shown as a determinant of certain types of social behaviors: dependency and hostility. These behaviors are determinants of social isolation and rejection which, in turn, are determinants of anxiety.

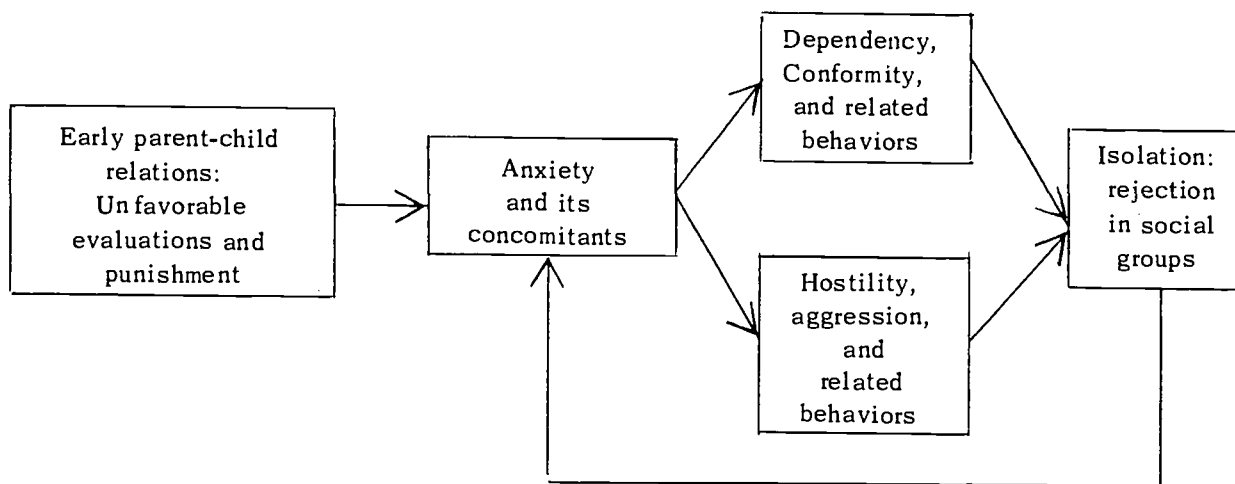


Figure 2. Interactions between Experience, Anxiety, and Behavior

### Intellectual functioning

A low negative correlation between intelligence and anxiety has been found in a majority of the investigations of the relationship between anxiety and intellectual functioning. This relationship is strongest in studies of children (Ruebush, 1963). Contradictory results have been obtained in studies with college students. Spielberger (1958) explained the college findings as the result of the selection factor in collegiate sample. With this truncated distribution, lower correlations between IQ and anxiety are to be expected.

The relationship between IQ and anxiety is more consistent with the TAS and the TASC than with the MAS and the CMAS (Forbes, 1969; S. B. Sarason, et al., 1960; I. G. Sarason and Minard, 1962; and I. G. Sarason, 1963). This result is reasonable, since intelligence is determined in a testing situation, and the TAS and TASC are intended to be more sensitive to test anxiety than the MAS or the CMAS. Correlations similar to those obtained with the TASC have been obtained with the SAS (Phillips, et al., 1969).

The digit span subscale of the WISC has been used extensively in research conducted to assess the effects of anxiety on intelligence test performance. The early investigations of this type produced conflicting results. Griffity (1952), Moldawski and Moldawski (1952), and Pyke and Agnew (1963) reported negative correlations between digit span performance and anxiety. Jurjevich (1963) reported a positive relationship, and Jackson and Bloombert (1958) and Matarazzo (1955) reported no relationship.

Spielberger and his colleagues hypothesized that these conflicting results were due to failure to distinguish between state and trait anx-

iety. They further hypothesized that only state anxiety would interfere with digit span performance. Hodges and Spielberger (1969) tested and confirmed the latter hypotheses. They found no relationship between trait anxiety and digit span performance; high state anxiety did cause a decrement in digit span performance.

A number of questions must be raised about the meaning or significance of the negative relationship between anxiety and intelligence in children. One possible explanation of this relationship is that those who are intelligent are more capable of coping with their environment and, therefore, have less about which to be anxious. An alternate explanation is that anxious persons have greater difficulty attending to and retaining information, and therefore score lower on intelligence tests which are, to some extent, achievement tests, or that anxiety interferes with test taking, so that anxious persons reveal lower levels of intelligence than they would in non-test situations. These explanations have widely divergent implications for remedial and preventative action, but much more research yielding hard data is needed before deciding among them.

In interpreting the relationship between anxiety and intelligence, Sarason, et al. (1960) took the position that anxiety is the etiologically significant factor. One argument on which they based their case was that the relationship between anxiety and intelligence test performance depends on the situational context. Zweibelson (1958), had shown, for example, that the negative relationship between intelligence and anxiety was greater when an intelligence test was administered in a test-like atmosphere with ego-involving instructions rather than in a relaxed, neutral atmosphere. To investigate this phenomenon, Paul and Erikson (1964) compared the results of a regular test in an introductory psychology course with those on an



equivalent form of the test which was introduced as an experiment having nothing to do with the students' course grades. They found that the scores on the regular examinations were unrelated to TAQ scores. Apparently some students with high anxiety improved in performance on the experimental form of the test, while some with low anxiety did not do as well. Sarason (1958) conducted a similar study in which nonsense-syllable learning tasks were given to high and low test-anxious subjects with either standard instructions or reassuring "therapy" instructions to allay possible anxiety feelings. High anxious subjects performed better under the reassurance "therapy" condition, while the low anxious subjects performed better with the standard instructions. These findings suggest that conditions which are designed to relieve anxiety may facilitate the learning of anxious students but interfere with the learning of nonanxious students.

Another approach to the study of anxiety as a causal factor in intellectual functioning involves comparing the intellectual performance of high and low anxious children with the effects of I. Q. scores controlled Waite, et al. (1958), using groups of high and low anxious children matched on the basis of I. Q. scores, found that, with intelligence controlled, low anxious subjects still mastered a paired associate learning task more rapidly than did high anxious subjects. In another study with intelligence held constant, Davidson (1959) found that for boys there was a significant negative relationship between grades in school and anxiety level. In a similar study of school anxiety, with intelligence partialled out, significant negative relationships were obtained between anxiety and teacher grades for different racial-ethnic groups (Phillips, et al., 1969). However, Broen (1959), in a study of fifth-grade boys with intelligence held constant, found that the TASC did not predict concurrent achievement test performance or

changes in achievement test performance during the school year. In contrast to this, Sarason and his colleagues (Sarason, Hill, and Zimbardo, 1964; Hill and Sarason, 1966) reported that changes in test anxiety and defensive scores across the elementary school years were accompanied by predicted changes in intelligence and achievement test performance.

Using a different approach, Robinson (1966) found that overachievers-- students who attained academic honors in spite of lower levels of measured academic ability -- gave more evidence of anxiety and neurotic traits than did honor students whose measured ability was commensurate with honors work. Since the subjects were differentiated on the basis of aptitude test scores, the findings could indicate that the overachievers had obtained aptitude scores below their actual level because of the interfering effects of anxiety. The overachievement could also be interpreted as a result of compulsive engagement in compensatory efforts to overcome feelings of inferiority and achievement anxiety.

Speilberger and Katzenmeyer (1959), using a sample of male college students, found that in the broad middle range of scholastic aptitude, high anxious students obtained poorer grades than low and high anxious students with respect to grade point averages. Speilberger (1966) explained these results on the basis of floor and ceiling effects that precluded the finding of achievement differences in the outer regions of the aptitude continuum. Feldhusen and Klausmeier (1962) found that the correlations between anxiety, intelligence, and achievement were negative for subjects with low and average IQ but not for those with superior IQ. In the only study located which took sex, social class, and level of intelligence into account, Phillips (1962) found that these variables played an interactive role in relationship between anxiety and various indices of educational achievement.

Odom and Atwell (1965) reduced the final examination performance of a sample of college students by interrupting them in the middle of the test. Half the students in a large examination room were asked to leave the room for a specified length of time. During this period, the group that remained engaged in an unrelated activity. When the first group returned, both groups completed the examination. The post-interruption performance of the group that left the room was significantly poorer than their pre-interruption performance; this was not true for the group that stayed in the room. The decrement of the first group was attributed to increased anxiety caused by uncertainty as to what the group that remained was doing and why they had to leave the room.

The studies cited above point out the difficulties in making causal statements about the relationship of anxiety and academic behavior. However, the frequency of significant correlations between the CMAS, TASC, and the SAS and a large variety of scholastic variables (Ruebush, 1963; Frost, 1969; Cowen, et al., 1965; and Phillips, et al., 1969) underscores the importance of unraveling the causal connections. It appears that the relationships between anxiety and factors such as intelligence and achievement are complex and require the use of multivariate analyses to determine their interactions.

Certain classroom procedures have been identified which seem to increase anxiety and, in turn, to affect achievement. Daily achievement testing was found by Proger, et al. (1969) to be significantly more anxiety producing than testing every other day or once per week. However, the anxiety produced by the daily testing decreased linearly over the 5 - week period of the study and did not affect long-term performance. Along

another line, Cohen and Forest (1968) have demonstrated that, in group settings, low anxious subjects developed problem solving techniques more quickly and showed more leadership than did high anxious subjects.

Penney (1965) studied the relationship between anxiety and curiosity, testing the hypothesis that individuals who are anxious are likely to be threatened by novel, strange, or unfamiliar circumstances and would therefore prefer familiar situations. He found a negative relationship between anxiety level and scores on the Penney and McCann (1964) "reactivity-curiosity" scale for children.

Considerable effort has gone into investigating the effects of anxiety on experimental learning tasks. While the results of the research have been mixed, several studies have shown that high levels of anxiety have a facilitative effect on the learning of simple tasks (Spence, Farber, and McCann, 1956; Castaneda, McCandless, and Palermo, 1956). On complex learning tasks, the research results consistently indicate that high levels of anxiety have a disruptive effect on performance (Spence, 1958; Taylor, 1958; Taylor and Chapman, 1955; and Stevenson and Odom, 1965). Lucas (1952) and Montague (1953) found that the learning performance of low anxious subjects increased relative to that of high anxious subjects as the complexity of a learning task was increased by greater similarity among the words on the list. Similarly, Spielberger and Smith (1966) found that the effects of anxiety varied with the serial position of items to be learned. Those in the middle of a list, where competing response tendencies are relatively high, were more difficult for subjects with high anxiety levels.

The disruptive effects of anxiety have also been observed in concept learning and incidental learning. Denny (1966) and Forbes (1969) both found the debilitating effect of anxiety on concept learning, with Denny

finding an interaction effect between anxiety and intelligence in determining performance. Easterbrook (1959) noted that high anxious subjects (particularly those under stress) had a limited perceptual field and showed less incidental learning. Corusch and Spielberger (1966) and Sarason (1961b) also found that stress resulted in a decrement in incidental learning. While Sarason did not find a significant effect for anxiety per se on incidental learning, Mendelsohn and Gruswold (1967) did obtain such a result.

The effects of anxiety on learning have also been found to depend on one's stage in the learning task. Anxiety has been shown to interfere with performance early in the learning task; as learning progresses, anxiety appears less likely to hinder performance and may even facilitate it (Spielberger and Smith, 1966; Gorth, Paulson, and Sieber, 1968; and Lekarczyk and Hill, 1960).

With respect to reinforcers, several research studies indicate that high anxious subjects respond differently than do low anxious subjects. Sarason and Ganzer (1963) found that high anxiety was associated with greater response to reinforcement in a verbal learning paradigm. Horowitz and Armentrout (1965) found that high anxious children performed better with "right" as a reinforcer than they did with a buzzer as the reinforcer; no difference or opposite results were found for low anxious subjects. Campeau (1968) reported that high anxious females did better with feedback on a programmed instruction task, while low anxious subjects did better than high anxious subjects under a no feedback condition. It appears that providing reinforcement and feedback helps to reduce the ambiguity of a situation and thus helps to counteract the debilitating effects of anxiety. Similarly, Sieber and Kamaya (1968) found that when anxious subjects were given memory supports for a complex problem solving task, they performed as

well as non-anxious subjects; without the memory support, their performance was poorer. However, Paulson (1969), using a concept learning task, found effects for both memory support and anxiety level, but no interaction between them. This would indicate that low anxious subjects profited as much from the use of memory supports as did high anxious subjects.

## Chapter V

### GENERAL RECOMMENDATIONS CONCERNING INTERVENTIONS

#### Assumptions Underlying Models for Intervention

Before delineating the possible models for school-related intervention programs, two general underlying assumptions must be specified. The first rests upon the theoretical and empirical knowledge which exists concerning anxiety. The second concerns the conception of mental health and the manner in which it may be maintained and promoted in school settings.

On the basis of the review of the literature on anxiety it is assumed that the experience of anxiety in the school environment, or the manifestations of its concomitants and consequences in school, is the result of psychological stresses to which the child is vulnerable. The sources of the stressors may lie within the educational framework, or may exist outside of the school context. Where the sources of psychological stress are within the school environment, techniques may be developed to modify classroom procedures to reduce or eliminate that stress. Such modifications may apply to the school experiences of all students, where this is advisable, or they may be introduced only for those students most vulnerable to the disruptive effects of anxiety. Where the source of psychological stress has its locus in the family, social groups, or the community, independent of the school system, intervention techniques must be devised to minimize the consequences of the resulting anxiety, i.e., minimize its interference with the student's successful adjustment to the school setting. A third possible approach is the use of intervention strategies in the school which will help to reduce the individual's vulnerability to psychological stress

from any source. This approach is directly related to the second assumption employed here.

In discussing the development of intervention strategies to be implemented by the schools, the use of the preventive model of mental health is implied. Cowen (1967) has argued against the medical, or treatment, model which involves individual psychotherapy and a presumption of intrapsychic dominance, believing it to be inadequate when applied in a school setting. This model assumes that the important sources of stimulation lie within the individual, thus obviating any need to effect external sources of stimulation. The families of lower class and/or minority group students are not likely to value the traditional therapeutic approaches. Parents are unlikely to transport their children to a clinic or similar centralized resource. In fact, the traditional clinic has served mainly middle class populations to the exclusion of others. The users of the preventive model of mental health advocate the introduction of mental health services in settings where all of the children in a community can be reached, e.g., the schools.

Under the medical model highly trained professional staffs generally devote a considerable expenditure of time to the treatment of a relatively few individuals. With the current shortage of mental health specialists, the preventive orientation has the advantage of attempting to utilize the services of subprofessionals in various roles. The subprofessionals, working in close consultation with clinically trained staff, can reach many more children than could otherwise be aided. The most important implication of this preventive approach is that active steps can be undertaken before the symptoms of any mental health problem become seriously manifest. Children can and should be helped from preschool levels onward so that major problems



can be avoided. The school system represents a setting which is well suited to the implementation of preventive procedures of demonstrated effectiveness.

### Strategies for Intervention

Under the preventive model approach to intervention, three categories of intervention strategies can be specified: Primary interventions are those applied to the entire population under consideration, e.g., the population of the school district; Secondary interventions are those applied to vulnerable subpopulations or subpopulations which already manifest some early symptomatology; and Tertiary interventions are those applied to subpopulations which have been positively diagnosed as evidencing significant symptomatology and as being in need of remediation (Bower, 1965).

Hollister (1965) has used this classification scheme to describe a program of anxiety interventions for the schools. Under primary interventions he suggests both interventions in the environment to eliminate or modify the psychological stress before it has had a chance to affect children and intervention to protect children from the impact of psychological stresses by building up their resistance to stress and their personality strength. Under secondary interventions he includes both interventions for children who are subject to stresses, where those stresses can be modified or eliminated and specific activities for children who need to be isolated from stress which cannot be modified. Finally, for tertiary intervention he discusses specific interventions for children who are already affected by stress and for whom the school needs to provide immediate mental health aid.

### Primary Intervention Strategies

The following two approaches are recommended for implementation on a school system-wide basis: (a) the utilization of teacher-psychological specialists and (b) the reorientation of school psychological services.

#### The Utilization of Teacher-Psychological Specialists

One of the most important recent developments in the field of education has been the emergence of an increased demand for the services of psychological specialists in the schools: Sarason, et al. (1966) present prototypes of community-oriented school psychological services; Strom (1964) describes the important role of psychological services in educating the disadvantaged; and Morse, Cutler, and Fink (1964) have demonstrated the demand for psychological specialists in special education. This increasing demand for psychological services in the schools in the years ahead is accepted as a premise and the following discussion will be concerned with the juxtaposition of this demand with the need for teacher-psychological specialists in the schools.

One of the questions which must be considered is how the roles and functions of the psychological services specialist are to be related to the roles and functions of the classroom teacher. The classroom teacher, is generally held to be best equipped and primarily responsible for helping the children reach cognitive objectives, while the psychological specialist is considered as best equipped and primarily responsible for dealing with the affective domain. Implicit in this distinction is the idea that schooling is principally concerned with knowledge, cognitive functioning, and skills; and that affective factors are of direct concern to the schools

only when developments in this area interfere with learning in the cognitive area. Others dislike this implicit assumption and hold that the cognitive and affective domains of behavior are of equal concern to the schools, and psychological specialists are to be called upon when either cognitive or affective development is not progressing satisfactorily.

In general, the existing situation is a dichotomy of teaching and psychological services. There is, on the one hand, the teacher who carries on the day-to-day teaching functions, and on the other hand, the non-teaching psychological specialist to whom difficult, inadequately understood children can be referred and from whom help can be obtained. Thus, in terms of school staffing there is a cadre of regular classroom teachers, and a cadre of psychological specialists. Student problems are seen as either of the kind that teachers can handle with their own resources, or as being of such a nature that the child involved must be referred to the psychological specialist.

A redirection of psychological services in the schools which takes into account not only specific problems or individual children but also the important new trends in education is now proposed. There are different jobs to be done, and different types of teachers are needed to carry them out, i.e., teachers with different kinds of personality characteristics and different kinds of training. Classroom teachers will continue to acquire basic teacher training, but many more will be trained beyond this basic level. In effect, they will specialize. Whether this specialization occurs at the pre-bachelor degree level, or in fifth year, is not crucial to the argument being developed. The essential point is that schools will increasingly be staffed with the teachers who are specialists as well as generalists.

To a significant degree, the master teacher concept embodies the ingredients of what is described above, except that the concept of the master teacher has been to a considerable extent limited to specialization in a subject matter field. However, the idea, in its generic sense, is basic to the field of psychological services. As applied here, there would be some teachers prepared as teacher-counselors, others as teacher-psychodiagnostics, and still others as teacher-school social workers. What should not be lost sight of in this delineation of teachers and teacher-specialists, is the fact that these groups are still teachers, with teaching assignments on a part-time basis. In other words, a teacher-counselor is utilized both as a teacher and as a psychological specialist within a school. Thus, the teacher with 4 years of training in basic teacher education and a fifth year of training in a speciality is primarily trained to teach, and only secondarily trained to function in the role of specialist.

#### Reorientation of School Psychological Services

Phillips (1968) has presented a set of postulates on which a school psychological services program designed to deal effectively with system-wide stresses can be based. The concepts involved are derived in part from the work of Sarason, et al. (1966) and Miles (1964). The postulates are as follows:

1. Given the revolutionary character of recent developments in education, the rationales on which psychological services are based ought to be reconceptualized and reconstructed. There is an abundance of evidence in the educational and psychological literature which gives direct or indirect support to this postulate. The impact of educational and computer technology, trends toward systematized community-wide psychological services, the edu-

cation of the disadvantaged and the evaluation of educational innovations, and a penchant for using diagnostic models analogous to those in medicine among others, make adaptation through reconceptualization and reconstruction almost inevitable.

2. School problem behavior, stress and anxiety, and learning difficulties of children are psychoeducational problems which are manifested in school settings. This postulate does not mean that school situations are necessarily the cause of the psychoeducational problems children manifest in such settings, since it is possible that the behavior in question may just be triggered by the school situation. In either case a change in the school setting would in most instances produce some change in the problem behavior, stress and anxiety, or learning difficulty. This postulate has the effect of pinpointing the need to look closely at the school environment, to develop concepts to describe it, and to explain the ways in which it is related to the behavior of children.

3. Techniques for individual diagnosis and intervention need to be supplemented with techniques for intervening in specific school settings. An implication of this postulate is that it generally is not sufficient just to intervene at the level of the individual's intrapsychic functioning, but intervention is also necessary at the level of the school setting at which the problem is manifested. If one changes a child's intrapsychic and behavioral functioning through psychotherapy in a clinic, it is still necessary to transfer this change in behavior to the school setting. This sometimes is a very difficult job. The point emphasized here is that there are different levels at which intervention can be aimed, and that schools must increasingly provide for intervention at a level beyond the child himself if the probability of change in his behavior in school settings is to be maximized.

4. The proximity in place and time of psychological services to the school settings in which psychoeducational problems are manifested increases the probability of effective utilization of these psychological services. Psychological services ought to be geographically located as near school settings as feasible, other factors being equal. In addition, when the period of time between the manifestation of problems and action on those problems is short, action is likely to be more effective, other factors being equal. (In some school systems, when a child is referred because he is having difficulties, it may be several months before the psychological staff has the opportunity to have someone study the case.)

5. The aims toward which psychological services are directed should be consistent with the aims of the school settings in which psycho-educational problems are manifested. The main thrust of this postulate is that when there are basic disagreements and inconsistencies between the goals and aims of the schools and the objectives of psychological diagnosis and intervention, the value and impact of psychology in the schools is lessened.

6. To be effective in the solution of psychoeducational problems, psychological services should be directed toward the development and utilization of resources indigenous to the schools. New forms of special services which are developed should have the potential for being institutionalized as part of the school. This postulate places some important limitations on what can be done. For example, psychotherapy would help many of the children who have psychoeducational problems and learning difficulties, but it would not generally be possible to institutionalize the hiring of psychotherapists by school systems on a large enough scale to meet the

need, nor would it be possible to develop in teachers the skills required to carry out psychotherapy.

7. An emphasis should be placed on the use of psychologists as consultants in the schools. Such consultation would involve working regularly with classroom teachers toward developing skills for identifying psychological problems, for handling behavioral problems, and for minimizing the effects of such problems on other members of the class. Consultants can also be used to acquaint teachers with the specific problems of subpopulations within the schools, like those discussed in the following section. The responsibility for research within the schools is another task that can be turned over to psychologists acting in an advisory capacity. It should be noted, however, that to advocate the use of consultants has become part of the conventional wisdom in education, with result that the term "consultation" has lost much of its specific meaning. Wherever possible, the consultant should try to help a system in such a way that when he leaves, the system will be able to solve future problems similar to those on which the consultant has helped. While this idea is important because it represents an attempt to overcome the limited manpower supply in the mental health field (Albee, and Dickey, 1957), it must be recognized that there is little research on the actual utility of consultants.

#### Secondary Intervention Strategies

Before discussing specific proposals for secondary intervention it is necessary to specify the target subpopulations which need to be reached. Among the potential target groups in the schools are the following:

Lower class minority groups--especially Negroes, and those undergoing desegregation. Katz (1968a) discusses the major sources of social and failure threat which are especially applicable to Negro children, but which would be generally applicable to other lower class, minority children. He identifies social threat with anticipated dangers associated with teacher and peer rejection and hostility. These conditions threaten the need for approval and lead to anxiety, its concomitants (especially covert reactions to stress), and to interpersonal aggression and withdrawal. Similarly, he identifies threat of failure with anticipated dangers associated with failure in achievement (i.e., evaluation-oriented) situations. These conditions threaten the need for self-esteem, and the consequences of failure threat are generally like those described for social threat.

As Katz further notes, desegregation conditions additional sources of psychological stress into the school lives of minority students (especially Negroes). Frequently there are fears of competition and inferiority feelings in relation to whites, which may be realistic or unrealistic, depending on the circumstances. Generally, there is increased vulnerability to threat and a greater suppression of hostility toward whites. Also, there are stronger emotional reactions to test-like situations.

Children from families whose socialization practices are likely to produce anxiety proneness. Although the origins of anxiety-proneness in early childhood are not clearly understood, there are patterns of child-raising which appear to predispose children toward anxiety-proneness in later years. The summary of some of these characteristics is based on the work of Izard and Tomkins (1966). One or more of the following are likely to have occurred in



the early family experiences of anxiety-prone children: (a) The child may be exposed to parents who use fear as a technique of socialization, especially in gaining norm compliance. In addition, the parents may communicate anxiety to their own child, so that he becomes anxious through identification. (b) Tolerance for fear is not taught, so that when the child is afraid, he "sweats it out," or the burden is increased by shaming the child for his fear. Where there is normative socialization aimed at toughness and independence, the child is taught to overcome his fear, but usually this is done by invoking shame and other negative sanctions for cowardice. (c) Counter-action against the source of fear is not taught, so that when the child shows fear, it is either disregarded or derogated. (d) The parents typically are insensitive to signs of anxiety in the child and disregard or minimize them. They deprecate as an alarmist anyone who suggest the child might need help.

Boys with sex role difficulties. Maccoby, et al. (1966) present an excellent discussion of the psychology of sex differences. Although it does not deal extensively with anxiety-proneness, they do present many sex differences relating to factors which might be considered concomitants of anxiety-proneness. Furthermore, as previously noted, anxiety-proneness and its concomitants are consistently related to deviations in sex-typed perceptions, attitudes, and behaviors among boys, but not among girls.

Underachievers in the early school years. In a review of the literature on underachievement between 1933-1963, Taylor (1964) found that underachievers are differentiated from overachievers by one or more of the following characteristics: Free floating--i.e., chronic, neurotic, or trait--anxiety (rather than well controlled anxiety); low self-esteem;

lack of acceptance of authority; poor relations with peers; either dependence or high conflict over independence; socially (rather than academically) oriented interests and activities; and unrealistic goals. Clearly, several of these characteristics of underachievers are indicative of anxiety-proneness and its concomitants.

Children who are experiencing developmental crisis situations.

There are a number of crisis situations common to subpopulations in the schools, e.g., first graders beginning their formal school experience. Another is adolescents entering junior high school. Since a crisis involves a struggle with a stressful situation (the term "crisis" is reserved for severely stressful situations which have a duration of at least several days), how one copes with it is very important. Caplan (1965) sees the response to these rather infrequent situations as being of central importance in the development of personality.

Related to the idea that crisis has a potential for significant growth, is the concept of stressors developed by Hollister (1965). A stressor is an experience in an individual's life that builds strength into his personality. It is the opposite of a trauma. Thus, a crisis could be a trauma or a stressor depending on how it was resolved. Hollister's conception of stress covers all kinds of experiences which build strength other than crisis situations. Real education experiences, and experiences of mastery and competence would qualify as stressors. The concept of stressors can also be related to Maslow's idea of "peak experiences."

While the crisis situations in school have been discussed in the literature (Bower, 1964) specific research needs to be done to identify in greater detail what aspects of these situations produce stress. In addition,

we need to learn about other situations which typically introduce important crises.

Four secondary intervention strategies are recommended: (a) the diagnostic-intervention class, (b) use of programmed instruction, (c) use of crisis prevention techniques, and (d) use of therapeutic tutoring. A number of the strategies recommended as tertiary interventions may also be selectively used with the aforementioned subpopulations.

The Diagnostic-Intervention Class. The concept of the Diagnostic Intervention (D.I.) class has been developed by Phillips (1967, 1968) and makes use of psychoeducational orientation. It is related to what Rice (1968) refers to as "educational-therapy." She states that a lack of academic success can be one cause of misbehavior. Therefore, it is necessary that an intervention program focus both on remediating the education deficits and dealing with the psychological deficits. The D.I. class does this and, at the same time, is sensitive to the interactions of both of these aspects of behavior. The prototypic D.I. class is nongraded and consists of a core group of 6-9 average children drawn equally from grades 1-3 (a similar D.I. class could be operated for grades 4-6). This core group would usually remain in the D.I. class for varying portions of the year. In addition, there ordinarily would be a small number of referrals from grades 1-3 in the D.I. class at one time, with their stay being indefinite and determined by individual diagnostic and intervention needs. The day-to-day responsibility for teaching the D.I. class would rest with the two teacher-psychological specialists assigned to the class, or one teacher-psychological specialist and several assistants. Special diagnosis and intervention activities would be under the supervision of a school psychologist or

child development specialist. The extent of his involvement would depend on the requirements of these special activities. Psychological testing for diagnostic, intervention, remedial, or experimental purposes usually would be done by the teacher-psychological specialist, as would most of the implementation of special, remedial, and compensatory educational techniques like tutoring, educational consultation, or the use of programmed instruction.

Referrals initially made by teachers in the regular classes, of potential D.I. class pupils would undergo a preinduction screening. This screening would be carried out by the D.I. class staff. On the basis of the information available, children who were deemed appropriate would be inducted into the D.I. class where they would stay, as long as was advisable. Also, children would be able to enter the D.I. class immediately on an emergency basis when a crisis develops and crisis intervention needed to be carried out. When diagnostic and related information indicates that a child can return to a regular class, the teacher who is to receive this child will then begin to participate in the development of further strategies and techniques before the transfer to her class occurs. Subsequent to this, the collaborative relationship should continue as long as is required. In some instances the transfer arrangements would include the child's spending part-time on a regularly or irregularly scheduled basis in the D.I. class where he would continue to receive tutoring or other special help. When it is established that a child needs to be placed in a special education class, he should be transferred accordingly. With borderline cases, a sustained effort should be made to test the limits of the child's adaptive capacity before such a transfer is made.

This proposal appears to be a viable and potentially effective approach to some of the problems of providing psychological services to schools. The postulates discussed earlier are believed to be fully consistent with the D.I. class concept and with the concept of staffing such classes with teacher-psychological specialists trained to function in a team with complementary teaching and psychological skills. Extensive opportunities to implement this D.I. class concept are needed in order to evaluate its effectiveness and to develop means of maximizing both effectiveness and efficiency.

Use of Programmed Instruction. Anderson (1967) has presented an excellent discussion of the recent research on the technology of instruction. He describes programmed instruction as involving: "...the clarification of educational goals and the translation of these into behavioral objectives; the analysis of the behaviors specified in the objectives into component concepts and subskills; the development of lessons to teach the concepts and subskills; and as many cycles of tryout, reanalysis, and revision of the lessons as are necessary to attain the objectives (p. 103)." It should be recognized that the rationale and techniques of programmed instruction are similar in their general outlines to the process of lesson development advocated by good teachers and curriculum specialists.

For specific target groups, specially designed programmed instructional packages may be employed to aid in the presentation of material in a nonstressful fashion. In addition, for some children, the use of instructional programs for repeated self-evaluation prior to teacher-evaluation may help to build the child's confidence in his mastery of new material and thus reduce the anxiety experienced during evaluation by the teacher.

Use of Crisis Prevention Techniques. Bower (1964) has proposed specific programs utilizing a crisis prevention approach for the crisis involving school entrance. According to Bower, at school entrance the child anxiously searches for the rules which govern the new school activity. Therefore, supportive coaching can be helpful at this time. One aspect of a supportive program is an assessment of each child prior to school entry, so that effective planning can be done. Such an early assessment would include an evaluation of cognitive, social, and emotional characteristics. After the child begins school, both parents would attend a weekly 2-hour meeting with other parents to keep in touch with their child's progress. A school social worker would be assigned to any child or family requiring help at this point. By the middle of the semester the school officials and the parents should become a cohesive group that works cooperatively to solve problems. Through the use of such a program, it is hoped that both the parents and the child will come to see the school as an institution trying to meet the needs of its students. The procedures are designed to maximize the probability that the outcome of this stressful transition will be the strengthening of the child's coping processes.

Bower also offers a program which can be used to help the child handle the crisis of role transition experienced with the onset of puberty. Specifically, he proposed the use of child study classes. These consist of two half days of work each week in a child care center run by the school district. At first the adolescents observe the children while staff members discuss institutional rules and methods for handling specific problems. Later, the students would begin to interact with the young children. Concurrently, school time would be spent discussing human behavior in general and specific aspects of human behavior which relate to contact with

children. The students would be urged to suggest various reasons for specific behaviors and to relate these to the techniques for help. A final portion of the class could be focused on the adolescents themselves.

Questions could be asked concerning their experiences (e.g. what did you feel you did best with the children? What did/didn't the children like about you?). This should help to build a broad basis for understanding the behavior of themselves and others. Moreover, students would learn how to communicate affective responses in such a way as to help improve their social functioning.

Another potentially effective way to deal with stress in a crisis prevention context is psychological inoculation. The approach is twofold. First, by providing knowledge about an impending stressful situation, the level of uncertainty will be reduced and this may serve to reduce, at least partially, the level of anxiety experienced in anticipation of the stressful event. Second, by providing instruction in coping techniques before the onset of the stress, the person should be better able to handle the stressful situation when it develops. For example, some time at the end of a school year could be devoted to descriptions of what will take place in the next grade level, and, at the same time, information could be given which will provide strategies that will enable the student to adapt to the unique aspects of the next grade.

An application of this inoculation technique was carried out by Janis (1958). He demonstrated that cognitive preparation for a stressful event (hospitalization) significantly reduced the stress experienced. Folkins, et al. (1968) found cognitive rehearsal to be superior to relaxation training in the reduction of anxiety. The inoculation technique is consistent with the theory of Mandler and Watson (1966) in that, once an unpleasant

experience is incorporated as part of one's cognitive plan, it no longer constitutes an interruption and becomes less capable of inducing stress. Similarly, with respect to examinations, information should be provided which clearly delineates what the test will be like and the methods of preparation that may prove useful. If some of the anxiety related to test-taking could be reduced and the energy channeled into useful methods of study, then tests could become more effective learning instruments.

Use of Therapeutic Tutoring. Therapeutic tutoring is a psychoanalytically-oriented remedial approach for children with "primary neurotic learning inhibitions" (Prentice and Sperry, 1965). These are children who are intellectually able but who have major learning problems of a presumed psychogenic etiology. This approach does not focus exclusively on either the learning disability or the presumed underlying conflicts. Both the educational and therapeutic functions are retained and are strategically interrelated. The role of the therapeutic tutor requires a knowledge of both the usual remedial methods and of psychodynamics. Tutorial efforts must combine the use of educational principles with an ability to deal with the child's emotional blocks. This approach requires tailoring specific techniques for each child being tutored. Usually, some teaching experience combined with the skills of a school or child-clinical psychologist would be necessary to fill this role. However, other professionals, and even subprofessionals, may be appropriate for this role, provided a school or child-clinical psychologist is available for supervision and consultation.



### Tertiary Intervention Strategies

The tertiary intervention model applies to children who are already seriously anxious, as reflected by phenomenological, physiological, or behavioral indices. These children are differentiated from the previous subpopulations in that they have been positively diagnosed as being highly anxious children.

Theoretically interventions relating to existing anxiety can have several foci. One is the reduction of anxiety itself through a remedial type of intervention. Another approach is to intervene in ways designed to reduce the debilitating effects of anxiety, for example, by changing the task and situational demands.

The review of research on tertiary interventions will be organized in terms of two general approaches: those aimed at the reduction of anxiety experienced and those aimed at minimizing the debilitating effects of anxiety.

Interventions Aimed at the Reduction of Anxiety. One way in which anxiety can be reduced is through the use of counseling and psychotherapy. The work of Goldstein and Dean (1966) purports to show that individual therapy decreases anxiety and increases the level of personal functioning of anxious persons. Similarly, there have been studies which discuss the efficacy of group therapy with children (Feder, 1967) and group therapy with parents (Gildea, et al., 1967). Specifically, Axline (1949), Bills (1950), and Mehus (1953) have demonstrated that play therapy helped to reduce children's problems in reading.

One approach that has been reported to be very successful in the treatment of phobias in adults has been behavior therapy, particularly systematic desensitization (Wolpe 1958, 1961). Lazarus (1959) found similar results for phobias in children, and the successful treatment of school phobias using systematic desensitization has been reported by Kennedy (1965) and Lazarus, Davison and Polefka (1965). This treatment approach would also appear to be appropriate for use with students having strong fears or anxiety over specific aspects of the school environment. A comprehensive discussion of the techniques of behavior therapy and the effectiveness of the treatment has been presented by Yates (1970).

The theory providing the basis for systematic desensitization is derived from the learning theory analysis of the nature and development of anxiety. If anxiety initially becomes attached as a response to some specific stimulus as a result of a classical conditioning process, then it follows that it can be removed through extinction and counter-conditioning. Extinction refers to the process in which a response, in this instance anxiety, is weakened because it is no longer reinforced. Counter-conditioning, also termed reciprocal inhibition, refers to the process of strengthening some alternative behavior as a response to the stimulus eliciting the anxiety. The alternative behavior is one which is incompatible with anxiety, for example, muscular relaxation. A person cannot simultaneously engage in anxiety responses and relax his muscles. One type of alternative behavior that has been successfully employed with children has been eating behavior (Jones, 1924; Lazarus, 1959; and Cautela, 1965).

The treatment technique of systematic desensitization is based on the principle that if a nonanxious behavior takes place when a person is in the presence of the anxiety-provoking stimulus, it may suppress the anxiety

response. If this combination is produced, then the strength of the association between the stimulus and anxiety will be reduced and the strength of the association between the stimulus and the alternative behavior will be increased.

The actual procedures of systematic desensitization using relaxation as the incompatible response involves three basic steps: (a) training in deep muscle relaxation; (b) the construction of an anxiety hierarchy; and (c) the actual desensitization procedures. Jacobson's (1938) methods for achieving muscle relaxation are the basis for the relaxation training techniques employed by the behavior therapists. Hypnosis and drugs are sometimes used as aids in the training process. The development of an anxiety hierarchy involves ordering the sources evoking anxiety in a general category, from the source evoking the weakest level of anxiety to the source resulting in the most intense anxiety response. After relaxation training has been completed and the anxiety hierarchies have been established, the actual process of desensitization can be initiated.

In desensitization the person is instructed to relax and is then asked to imagine the anxiety source that is lowest on the hierarchy. He is told to hold the image until he begins to feel anxious, at which point he is to stop imagining the source of anxiety. After repeated trials using the lowest item in the hierarchy the person is able to hold the image for longer and longer periods of time before beginning to feel anxious. Relaxation is then being substituted for the anxiety behavior as a response to that stimulus. The person eventually reaches a point at which he can imagine that source for an indefinite length of time without feeling anxious. He then progresses to the next item in the hierarchy, and the process is repeated. Since generalization occurs, whereby the behavior learned in

response to one stimulus becomes at least partially attached to other similar or associated stimuli, part of the counter-conditioning effect will already have taken place to the next item in the hierarchy. This tends to aid the desensitization process for each succeeding item in turn. At some point real objects may be substituted for images of the anxiety sources. This helps for generalizing the new alternative behavior to situations in which the actual stimuli are encountered outside of the therapy setting. While systematic desensitization is generally done on an individual basis, the whole process does not usually take a long time to complete and is potentially applicable for large numbers of individuals. Its applicability for use in school settings has not yet been ascertained.

Recently there has been considerable discussion regarding the use of sensitivity training. Harrison (1966) indicates that sensitivity training increases the awareness of one's social stimulus value. In addition, Katahn, et al. (1966) note that students reported talking about their feelings helped to reduce anxiety. They also found that when students learned their teachers viewpoints, there was a reduction in reported anxiety. This line of research relates directly to the work that has been done to encourage the teaching of psychological principles in the schools. Proposals have ranged from the development of a specific course in psychology (Roen, 1967) to the idea of introducing concepts relating to the understanding of human behavior as part of the entire school curriculum (Ojemann, 1961; Zimiles, 1967; Farr, 1967; Phillips and DeVault, 1959). Within this framework it would be expected that children would more frequently have the opportunity to express their feelings.

One current technique which attempts to reduce the stress on a child is placement in a "special education class." It is necessary to recognize

the subtle effects which this labelling may have upon him. The child who finds that he was unsuccessful in the regular class and is placed in a group containing other children who are marked as failures in school is not likely to have aspirations or expectations commensurate with his ability. In addition, the attitude of special education teachers is frequently pessimistic for they do not expect to be able to help change children who have already been labelled as "emotionally disturbed," or "mentally retarded." It would appear that the importance of teacher expectancies is not limited to special education classes, since the research of Rosenthal and Jacobsen (1968) have demonstrated such effects in regular classes. However, this work has been criticized by Snow (1969) and Thorndike (1968).

A factor which tends to increase the problems of utilizing special education classes is the occasional use of a custodial orientation. In other words, this type of educational placement is sometimes seen as providing a place in which to keep the "problem child" until he is no longer required to attend school. It is not surprising, therefore, that it has been found that students in special education classes are burdened with feelings of rejection, hostility, and anger toward the school. These are probably over and above the feelings associated with the school difficulties they have previously experienced (Hunter, 1968). Moreover, there is frequently an absence of plans to return the child to the regular classroom in cases where this is ultimately feasible. By neglecting this possibility, what may be communicated to the child is that he is not expected to move out of the special class, and therefore it does not matter what he does. Thus, one significant improvement in special education might be to incorporate into the general philosophy of special education and into

the specific procedures of placement, some plan for a return to the regular class, where possible, and for follow-up activities with the child and his regular classroom teacher after returning (Lewis, 1967; Tolor and Lane, 1968; Morse, Cutler, and Fink, 1964).

In pointing out the several weaknesses of special education classes it is still recognized that there are some children in school who are burdened by problems (such as excessive anxiety) that require interventions which the regular classroom does not have the resources to handle without outside support. One potential approach to these problems is the Diagnostic-Intervention (D.I.) class (Phillips, 1967, 1968), already discussed in detail above. An additional approach which has been found to reduce the probability of anxiety behaviors involves the use of the principles of social reinforcement. Sarason and Harmaty (1965) found that using "good" as a reinforcer produced better performance than the use of "try harder." Similarly, Sarason and Ganzer (1962) found a significant increase in positive self-references following positive reinforcement. In a later study (Sarason and Ganzer, 1963) it was found that high anxious subjects were more influenced by reinforcement on a verbal learning task than were low anxious subjects. Horowitz and Armentrout (1965) found that high anxious subjects performed better when the word "right" was used as a reinforcer than when a buzzer was used. No differences between the two types of reinforcement were found for low anxious subjects.

A frequently used form of reinforcement involves teacher attention or token reward systems. Wolf, et al. (1967) have consistently demonstrated the ability of a teacher to control some well defined behavior of a child by use of such techniques. Tyler and Brown (1968) have found that the use of token reinforcements contingent on some behavior consistently strengthen

that behavior. Scott, Burton, and Yarrow (1967) found that adult approval, when contingent upon socially acceptable responses to peers, changed the nature of a 4-year-old child's interactions in a nursery school setting. Graubard (1968) has demonstrated the power of peer group reinforcement in manipulating behavior. A class was permitted to choose the rewards they would obtain if a specified level of behavior was maintained. It was found that the group was effective in controlling the behavior of deviating children. Reinforcement principles have also been shown to be effective in bringing an "out-of-control" class under control (Orme & Purnell, 1968). Finally, Hewett (1968) has also developed a total learning-teaching program for emotionally disturbed children based on behavior modification principles.

A final technique which may serve to reduce anxiety levels makes use of the concept of modeling. Geer and Turteltaub (1967) and De Wolfe (1967) have demonstrated that observing a nonanxious model led to reduced anxiety levels in the observer. Further, Sarason, Pederson, and Nyman (1968) found that observing a model succeed on a serial learning task significantly increased the subjects' level of performance on such tasks. Ross (1966) found that highly dependent children showed more learning through imitation than did children low on dependency. By implication, it can be hypothesized that children high on anxiety could benefit from being placed in classes with teachers low on anxiety. Since modeling can take place with peers as models, opportunities should be developed for highly anxious students to identify with low anxious classmates. In regular classroom routines this can be accomplished through appropriate pairing for activities requiring partners.

Interventions Which Manipulate the Effects of Anxiety. There is a variety of techniques that can be employed to ameliorate the effects of anxiety on performance. Sarason, et al. (1960) discuss the effects of permitting a student to express his dependency needs. A high anxious child may perform better in an individual testing situation than under group testing conditions, since the former setting allows him the opportunity to express his dependency needs.

Another approach to manipulating the effects of anxiety makes use of programmed instruction. Tobias and Williamson (1968) contend that anxious children should benefit more from programmed instruction than would non-anxious children because programmed materials minimize interpersonal evaluation and decrease the stress caused by uncertainty. However, it is somewhat questionable whether a programmed format can effectively eliminate the evaluative component of learning, since implicit or explicit comparisons can be made in terms of the number of trials to completion. However, an additional argument supporting the use of programmed instruction for anxious children can be based on the fact that relatively high levels of anxiety facilitate performance on simple tasks, i.e., where incorrect competing response tendencies are low on the hierarchy. Because of the small-steps technique built into programmed materials, the complexity of the learning task is reduced, and this should help the high anxious student. Proger, et al. (1969) cite evidence to support this viewpoint. It should be noted, however, that a programmed learning situation reduces interpersonal contact and, thus, anxious students have little opportunity to express dependency needs. Additional steps can be taken in the classroom to make use of small and moderate learning steps in the presentation of material. Sieber (1969)



discusses the use of memory supports such as diagrams, mnemonic devices, and outlining systems which can be used in routine fashion.

### An Epilogue on Intervention Strategies

In summary, two conceptions of intervention emerge in these reviews of primary, secondary, and tertiary models of intervention. One has its focus on stress situations. These situations need to be identified, anticipated, and modified in the school system as a whole, at the level of a particular school, within certain subgroups of children, and for individual children. The other has its focus on discovering and developing learning situations which utilize the advantages and avoid the disadvantages of anxiety. Since anxiety may be facilitative or disruptive depending on the requirements of the particular learning task, by manipulating the requirements of the task learning, efficiency can be increased for both highly anxious and low anxiety children.

In an overall sense, these conceptions of intervention are complementary and should lead to systematic efforts to develop school-learning environments which minimize stress and the disruptive effects of anxiety. These efforts can proceed successfully only if they are accompanied by concerted research programs.

Finally, the various intervention techniques have been included under the strategies where they were deemed to be most appropriate, although the inclusion under a particular strategy does not necessarily preclude its use with other strategies. These strategies have the flexibility and potential to fulfill different purposes under a variety of conditions and to be useful with different types of children.

## APPENDIX 1

### SUMMARY OF THE PROBLEMS ENCOUNTERED IN ADMINISTERING PSYCHOLOGICAL QUESTIONNAIRES IN THE SCHOOL SETTING

Alan S. Waterman

The problems encountered in administering psychological questionnaires, including paper and pencil measures of anxiety, in the school setting can be divided into three general categories: (a) problems associated with the administration of the tests, (b) problems involved in drawing conclusions from the tests, and (c) problems arising from the existence of the information.

#### Problems Associated With the Administration of the Tests

Among the problems associated with the administration of anxiety scales in the school context are the following:

1. Since the question of invasion of privacy has been raised in the past concerning the use of psychological tests in the schools, parental permission should be obtained prior to scheduling of any testing. Consideration should be given to what, if anything, will be the consequences if a parent or a child refuses to cooperate.

2. Unlike medical tests routinely administered in schools (e.g., vision, hearing), the prospect of psychological evaluation may be traumatic for a child. Many children equate psychology and psychiatry with mind-reading and this might constitute the basis of their fears. The frequency of fear reactions in anticipation of psychological testing is not yet known.

3. The child may show severe traumatic reactions to the content of specific questions on psychological scales. The material on the scales is

not affectively neutral, and direct questions about fears, nightmares, or deviant behaviors may cause intense anxiety. The frequency of traumatic reactions to actual testing is not yet known.

4. The question of who is going to administer the tests (teacher or psychologist) must be considered. The effect of the mode of administration on the test results is not yet known.

5. The question of how frequently such tests are to be administered must be considered. The effect of repeated testings on the utility of the test results and on the persons taking the scales has not yet been ascertained.

6. A particular problem that arises as a result of repeated testings is that opportunities occur for the students to communicate among themselves about the nature of the tests and to share speculations about what various responses may mean. The accuracy of these speculations is not important but the effect of the development of any shared view of the nature of such testing is likely to have consequences that cannot easily be ascertained.

#### Problems Involved in Drawing Conclusions From the Tests

Among the problems involved in drawing conclusions from paper and pencil measures of anxiety are the following:

1. Information on the validity of psychological scales for anxiety suggests that they are appropriate for assessing the average level of anxiety for a group of individuals (e.g., a class) but are not appropriate for individual diagnostic purposes.

2. Since scores on psychological tests are influenced by numerous factors beside the variable intended to be measured, the question of how and by whom a decision will be made as to whether a person's psychological

functioning was validly assessed must be considered. Among the factors that can materially influence a person's score are: his level of defensiveness, his mood at the time of the testing, his beliefs about the consequences of various types of test performance, the environmental conditions under which the test was taken, the events that occurred immediately prior to the testing, and the person's physical condition at the time of the testing (e.g., hunger, fatigue, physical disease).

3. Information on the meaning of various psychological test results for different racial and ethnic groups suggests that evaluation of the scales must be made from a culturally relativistic viewpoint, for which adequate data is not available.

4. If an individual is compared with only his immediate school peer group, then a moderately anxious child in a largely nonanxious peer group will stand out as much as a highly anxious child in a moderately anxious peer group. The same evaluation in these two instances would not be appropriate but in practice the distinguishing of these two conditions might not be easy to achieve.

#### Problems Arising From the Existence of the Information

Among the problems arising from the existence of information concerning a child's anxiety scale scores are the following:

1. The question of the confidentiality of the test scores must be considered. If teachers or other school personnel who come into regular contact with students are aware of their anxiety scale scores, this knowledge may influence their behavior toward them. The negative consequences of such expectation effects have already been demonstrated with respect to IQ scores.

2. If a decision is made to withhold test scores from the teachers, then procedures must be developed which will allow for the use of the material by qualified personnel while safeguarding against leaks to unauthorized personnel. Such procedures may already be in existence in some school districts.

3. Since parental authorization for the administration of psychological measures must be obtained, the parents will be aware that the information exists, and they will have the right to have access to that material. While it is problematic how many parents will avail themselves of the opportunity to receive the information, the potential difficulties must be recognized. The parents are not likely to have an adequate understanding of the meaning of the test results nor of the limitations of their utility. Further, the parents knowledge of the scores may set up expectations leading to self-fulfilling prophecies with markedly detrimental consequences.

4. The problem of the frequency of psychological testing is related to another problem as to how long scores are to hold in the student's record. In some instances, test results may be outdated in a matter of hours, days, or weeks, while for some children scores may remain stable for months or years. To maintain records on psychological test performance which are outdated may do a major disservice to the children involved. If test materials are to be dumped from the file, criteria must be established as to the appropriate interval during which the results should be held.

5. The whole question of the conflict between rights to privacy and record keeping must be resolved. This is not an empirical question which can be answered by psychologists or educators. It is a political-judicial-ethical problem and it must be decided on that basis.

Appendix 2A

THE TAYLOR MANIFEST ANXIETY SCALE<sup>1</sup>

Biographical Inventory

Items Included in the Manifest Anxiety Scale and Responses Scored as  
"Anxious."  
-----

1. I do not tire quickly. (False)
2. I am often sick to my stomach. (True)
3. I am about as nervous as other people. (False)
4. I have very few headaches. (False)
5. I work under a great deal of strain. (True)
6. I cannot keep my mind on one thing. (True)
7. I worry over money and business. (True)
8. I frequently notice my hand shakes when I try to do something.  
(True.)
9. I blush as often as others. (False)
10. I have diarrhea ("the runs") once a month or more. (True)
11. I worry quite a bit over possible troubles. (True)
12. I practically never blush. (False)
13. I am often afraid that I am going to blush. (True)

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<sup>1</sup>Reference: Taylor (1953)

<sup>2</sup>Anxiety items may be presented along with buffer items from the MMPI.

14. I have nightmares every few nights. (True)
15. My hands and feet are usually warm enough. (False)
16. I sweat very easily even on cool days. (True)
17. I do not often notice my heart pounding and I am seldom short of breath. (False)
18. I feel hungry almost all the time. (True)
19. Often my bowels don't move for several days at a time. (True)
20. I have a great deal of stomach trouble. (True)
21. At times I lose sleep over worry. (True)
22. My sleep is restless and disturbed. (True)
23. I often dream about things I don't like to tell other people. (True)
24. I am easily embarrassed. (True)
25. My feelings are hurt easier than most people. (True)
26. I often find myself worrying about something. (True)
27. I wish I could be as happy as others. (True)
28. I am usually calm and not easily upset. (False)
29. I cry easily. (True)
30. I feel anxious about something or someone almost all of the time. (True)
31. I am happy most of the time. (False)
32. It makes me nervous to have to wait. (True)
33. At times I am so restless that I cannot sit in a chair for very long. (True)
34. Sometimes I become so excited that I find it hard to get to sleep. (True)
35. I have often felt that I faced so many difficulties I could not overcome them. (True)

36. At times I have been worried beyond reason about something that really did not matter. (True)
37. I do not have as many fears as my friends. (False)
38. I have been afraid of things or people that I know could not hurt me. (True)
39. I certainly feel useless at times. (True)
40. I find it hard to keep my mind on a task or job. (True)
41. I am more self-conscious than most people. (True)
42. I am the kind of person who takes things hard. (True)
43. I am a very nervous person. (True)
44. Life is often a strain for me. (True)
45. At times I think I am no good at all. (True)
46. I am not at all confident of myself. (True)
47. At times I feel that I am going to crack up. (True)
48. I don't like to face a difficulty or make an important decision. (True)
49. I am very confident of myself. (False)



Appendix 2B

THE CHILDREN'S MANIFEST ANXIETY SCALE<sup>1</sup>

Name \_\_\_\_\_

Grade \_\_\_\_\_

Directions: Read each question carefully. Put a circle around the word YES if you think it is true about you. Put a circle around the word NO if you think it is not true about you.

- |           |   |     |    |                   |
|-----------|---|-----|----|-------------------|
| (1.)      | It is hard for me to keep my mind on anything.....      | YES | NO | (1.)              |
| (2.)      | I get nervous when someone watches me work.....         | YES | NO | (2.)              |
| (3.)      | I feel I have to be best in everything.....             | YES | NO | (3.)              |
| (4.)      | I blush easily.....                                     | YES | NO | (4.)              |
| (L) (5.)  | I like everyone I know.....                             | YES | NO | (5.) <sup>2</sup> |
| (6.)      | I notice my heart beats very fast sometimes....         | YES | NO | (6.)              |
| (7.)      | At times I feel like shouting.....                      | YES | NO | (7.)              |
| (8.)      | I wish I could be very far from here.....               | YES | NO | (8.)              |
| (9.)      | Others seem to do things easier than I can.....         | YES | NO | (9.)              |
| (L) (10.) | I would rather win than lose in a game.....             | YES | NO | (10.)             |
| (11.)     | I am secretly afraid of a lot of things.....            | YES | NO | (11.)             |
| (12.)     | I feel that others do not like the way I do things..... | YES | NO | (12.)             |
| (13.)     | I feel alone even when there are people around me.....  | YES | NO | (13.)             |
| (14.)     | I have trouble making up my mind.....                   | YES | NO | (14.)             |

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<sup>1</sup>Reference: Castaneda, et al., (1956).

<sup>2</sup>(L) Indicated items forming the CMAS Lie Scale.

	(15.)	I get nervous when things do not go the right way for me.....	YES	NO	(15.)
	(16.)	I worry most of the time.....	YES	NO	(16.)
(L)	(17.)	I am always kind.....	YES	NO	(17.)
	(18.)	I worry about what my parents will say to me.....	YES	NO	(18.)
	(19.)	Often I have trouble getting my breath.....	YES	NO	(19.)
	(20.)	I get angry easily.....	YES	NO	(20.)
(L)	(21.)	I always have good manners.....	YES	NO	(21.)
	(22.)	My hands feel sweaty.....	YES	NO	(22.)
	(23.)	I have to go to the toilet more than most people.....	YES	NO	(23.)
	(24.)	Other children are happier than I.....	YES	NO	(24.)
	(25.)	I worry about what other people think of me.....	YES	NO	(25.)
	(26.)	I have trouble swallowing.....	YES	NO	(26.)
	(27.)	I have worried about things that did not really make any difference later.....	YES	NO	(27.)
	(28.)	My feelings get hurt easily.....	YES	NO	(28.)
	(29.)	I worry about doing the right things.....	YES	NO	(29.)
(L)	(30.)	I am always good.....	YES	NO	(30.)
	(31.)	I worry about what is going to happen.....	YES	NO	(31.)
	(32.)	It is hard for me to go to sleep at night.....	YES	NO	(32.)
	(33.)	I worry about how well I am doing in school.....	YES	NO	(33.)
(L)	(34.)	I am always nice to everyone.....	YES	NO	(34.)
	(35.)	My feelings get hurt easily when I am scolded.....	YES	NO	(35.)

(L)	(36.)	I tell the truth every single time.....	YES	NO	(36.)
	(37.)	I often get lonesome when I am with people.....	YES	NO	(37.)
	(38.)	I feel someone will tell me I do things the wrong way.....	YES	NO	(38.)
	(39.)	I am afraid of the dark.....	YES	NO	(39.)
	(40.)	It is hard for me to keep my mind on my school work.....	YES	NO	(40.)
(L)	(41.)	I never get angry.....	YES	NO	(41.)
	(42.)	Often I feel sick in my stomach.....	YES	NO	(42.)
	(43.)	I worry when I go to bed at night.....	YES	NO	(43.)
	(44.)	I often do things I wish I had never done.....	YES	NO	(44.)
	(45.)	I get headaches.....	YES	NO	(45.)
	(46.)	I often worry about what could happen to my parents.....	YES	NO	(46.)
(L)	(47.)	I never say things I shouldn't.....	YES	NO	(47.)
	(48.)	I get tired easily.....	YES	NO	(48.)
(L)	(49.)	It is good to get high grades in school.....	YES	NO	(49.)
	(50.)	I have bad dreams.....	YES	NO	(50.)
	(51.)	I am nervous.....	YES	NO	(51.)
(L)	(52.)	I never lie.....	YES	NO	(52.)
	(53.)	I often worry about something bad happening to me.....	YES	NO	(53.)

## Appendix 2C

### THE GENERAL ANXIETY SCALE FOR CHILDREN AND THE LIE SCALE FOR CHILDREN<sup>1</sup>

I've asked you a lot of questions, and I will ask you some more questions soon. But, in the meantime, let's do something different. Turn to the next page--it's a blank page. Draw a picture of a man on this page. Just take a couple of minutes to draw it. I'll tell you shortly before you're to stop. Draw a picture of a man.....

(If questions are asked about what kind of drawing, answer "Any kind of drawing you want"; if questions are asked about erasing, permit it; allow 2 minutes for the drawing; say after  $1\frac{1}{2}$  minutes, "You will have to stop soon.")

Turn to the next page. Draw a picture of a woman on this page. Again just take a couple of minutes to draw it. Draw a picture of a woman.....

Turn to the next page. Draw a picture of a house on this page. Again just take a couple of minutes to draw it. Draw a picture of a house....<sup>2</sup>

Turn to the last page. Write your name at the top of the page, both your first and your last names. I'm going to ask you some more questions about how you think and feel. Remember, there are no right or wrong answers. Listen carefully to each question and put a circle around either "yes" or "no" after deciding how you think and feel. Number 1. When you are \_\_\_\_\_

1. When you are away from home, do you worry about what might be happening at home?
2. Do you sometimes worry about whether  
(other children are better looking than you are?)  
(your body is growing the way it should?)

---

<sup>1</sup>Reference: S. B. Sarason, et al. (1960)

<sup>2</sup>Projective Draw-A-Person test is interpolated between administrations of the TASC and GASC (see S. B. Sarason, et al., 1960, chapter 9).

3. Are you afraid of mice or rats?
- L<sup>1</sup> 4. Do you ever worry about knowing your lessons?
5. If you were to climb a ladder, would you worry about falling off it?
6. Do you worry about whether your mother is going to get sick?
7. Do you get scared when you have to walk home alone at night?
- L 8. Do you ever worry about what other people think of you?
9. Do you get a funny feeling when you see blood?
10. When your father is away from home, do you worry about whether he is going to come back?
11. Are you frightened by lightning and thunderstorms?
- L 12. Do you ever worry that you won't be able to do something you want to do?
13. When you go to the dentist, do you worry that he may hurt you?
14. Are you afraid of things like snakes?
15. When you are in bed at night trying to go to sleep, do you often find that you are worrying about something?
- L 16. When you were younger, were you ever scared of anything?
17. Are you sometimes frightened when looking down from a high place?
18. Do you get worried when you have to go to the doctor's office?
19. Do some of the stories on radio or television scare you?
- L 20. Have you ever been afraid of getting hurt?
21. When you are home alone and someone knocks on the door, do you get a worried feeling?
22. Do you get a scary feeling when you see a dead animal?

---

<sup>1</sup>L indicates items used in the Lie Scale for Children (LSC)

23. Do you think you worry more than other boys and girls?
24. Do you worry that you might get hurt in some accident?
- L. 25. Has anyone ever been able to scare you?
26. Are you afraid of things like guns?
27. Without knowing why, do you sometimes get a funny feeling in your stomach?
28. Are you afraid of being bitten or hurt by a dog?
- L. 29. Do you ever worry about something bad happening to someone you know?
30. Do you worry when you are home alone at night?
31. Are you afraid of being too near fireworks because of their exploding?
32. Do you worry that you are going to get sick?
- L. 33. Are you ever unhappy?
34. When your mother is away from home, do you worry about whether she is going to come back?
35. Are you afraid to dive into the water because you might get hurt?
36. Do you get a funny feeling when you touch something that has a real sharp edge?
- L. 37. Do you ever worry about what is going to happen?
38. Do you get scared when you have to go into a dark room?
39. Do you dislike getting in fights because you worry about getting hurt in them?
40. Do you worry about whether your father is going to get sick?
- L. 41. Have you ever had a scary dream?
42. Are you afraid of spiders?
43. Do you sometimes get the feeling that something bad is going to happen to you?
44. When you are alone in a room and you hear a strange noise, do you get a frightened feeling?
- L. 45. Do you ever worry?

# MULTIPLE AFFECT ADJECTIVE CHECK LIST

TODAY FORM

By Marvin Zuckerman  
and  
Bernard Lubin

Name..... Age..... Sex.....

Date..... Highest grade completed in school.....

DIRECTIONS: On this sheet you will find words which describe different kinds of moods and feelings. Mark an ☒ in the boxes beside the words which describe how you feel now - today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

PUBLISHED BY EDUCATIONAL AND INDUSTRIAL TESTING SERVICE  
BOX 7234, SAN DIEGO, CALIFORNIA

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A

D

H

- 1 ☐ active
- 2 ☐ adventurous
- 3 ☐ affectionate
- 4 ☐ afraid
- 5 ☐ agitated
- 6 ☐ agreeable
- 7 ☐ aggressive
- 8 ☐ alive
- 9 ☐ alone
- 10 ☐ amiable
- 11 ☐ amused
- 12 ☐ angry
- 13 ☐ annoyed
- 14 ☐ awful
- 15 ☐ bashful
- 16 ☐ bitter
- 17 ☐ blue
- 18 ☐ bored
- 19 ☐ calm
- 20 ☐ cautious
- 21 ☐ cheerful
- 22 ☐ clean
- 23 ☐ complaining
- 24 ☐ contented
- 25 ☐ contrary
- 26 ☐ cool
- 27 ☐ cooperative
- 28 ☐ critical
- 29 ☐ cross
- 30 ☐ cruel
- 31 ☐ daring
- 32 ☐ desperate
- 33 ☐ destroyed
- 34 ☐ devoted
- 35 ☐ disagreeable
- 36 ☐ discontented
- 37 ☐ discouraged
- 38 ☐ disgusted
- 39 ☐ displeased
- 40 ☐ energetic
- 41 ☐ enraged
- 42 ☐ enthusiastic
- 43 ☐ fearful
- 44 ☐ fine

- 45 ☐ fit
- 46 ☐ forlorn
- 47 ☐ frank
- 48 ☐ free
- 49 ☐ friendly
- 50 ☐ frightened
- 51 ☐ furious
- 52 ☐ gay
- 53 ☐ gentle
- 54 ☐ glad
- 55 ☐ gloomy
- 56 ☐ good
- 57 ☐ good-natured
- 58 ☐ grim
- 59 ☐ happy
- 60 ☐ healthy
- 61 ☐ hopeless
- 62 ☐ hostile
- 63 ☐ impatient
- 64 ☐ incensed
- 65 ☐ indignant
- 66 ☐ inspired
- 67 ☐ interested
- 68 ☐ irritated
- 69 ☐ jealous
- 70 ☐ joyful
- 71 ☐ kindly
- 72 ☐ lonely
- 73 ☐ lost
- 74 ☐ loving
- 75 ☐ low
- 76 ☐ lucky
- 77 ☐ mad
- 78 ☐ mean
- 79 ☐ meek
- 80 ☐ merry
- 81 ☐ mild
- 82 ☐ miserable
- 83 ☐ nervous
- 84 ☐ obliging
- 85 ☐ offended
- 86 ☐ outraged
- 87 ☐ panicky
- 88 ☐ patient

- 89 ☐ peaceful
- 90 ☐ pleased
- 91 ☐ pleasant
- 92 ☐ polite
- 93 ☐ powerful
- 94 ☐ quiet
- 95 ☐ reckless
- 96 ☐ rejected
- 97 ☐ rough
- 98 ☐ sad
- 99 ☐ safe
- 100 ☐ satisfied
- 101 ☐ secure
- 102 ☐ shaky
- 103 ☐ shy
- 104 ☐ soothed
- 105 ☐ steady
- 106 ☐ stubborn
- 107 ☐ stormy
- 108 ☐ strong
- 109 ☐ suffering
- 110 ☐ sullen
- 111 ☐ sunk
- 112 ☐ sympathetic
- 113 ☐ tame
- 114 ☐ tender
- 115 ☐ tense
- 116 ☐ terrible
- 117 ☐ terrified
- 118 ☐ thoughtful
- 119 ☐ timid
- 120 ☐ tormented
- 121 ☐ understanding
- 122 ☐ unhappy
- 123 ☐ unsociable
- 124 ☐ upset
- 125 ☐ vexed
- 126 ☐ warm
- 127 ☐ whole
- 128 ☐ wild
- 129 ☐ willful
- 130 ☐ wilted
- 131 ☐ worrying
- 132 ☐ young



Appendix 2E

THE TEST ANXIETY SCALE<sup>1</sup>  
PSYCHOLOGICAL SURVEY

Read each statement and decide whether it is true or false as applied to you. Mark your answers on the answer sheet. If a statement is TRUE or MOSTLY TRUE, as applied to you, blacken between the lines in the column headed True. If a statement is FALSE or NOT USUALLY TRUE, as applied to you, blacken between the lines in the column headed False.

Remember to give YOUR OWN opinions. Do not leave any blank spaces. Be sure the number of the statement agrees with the number on the answer sheet. Make your marks heavy and black. Erase completely any answer you wish to change.

Do not make any marks on this sheet.

1. I seem to defeat myself while working on important tests.
6. While taking an important exam I find myself thinking of how much brighter the other students are than I am.
7. The harder I work at taking a test, or studying for one, the more confused I get.
8. As soon as an exam is over I try to stop worrying about it, but I just can't.
10. If I were to take an intelligence test I would worry a great deal before taking it.
12. During exams I sometimes wonder if I'll ever get through college.
13. I would rather write a paper than take an examination for my grade in a course.
14. I wish examinations did not bother me so much.
15. I think I could do much better on tests if I could take them alone and not feel pressured by a time limit.
16. Thinking about the grade I may get in a course interferes with my studying and my performance on tests.

---

<sup>1</sup>Reference: I. G. Sarason (1958)

18. If examinations could be done away with I think I would actually learn more.
19. On exams, I take the attitude, "If I don't know it now, there's no point worrying about it."
21. If I knew I was going to take an intelligence test, I would feel confident and relaxed, beforehand.
22. I really don't see why some people get so upset about tests.
23. Thoughts of doing poorly interfere with my performance on tests.
25. I don't study any harder for final exams than for the rest of my course work.
26. Even when I'm well prepared for a test, I feel very anxious about it.
30. I don't enjoy eating before an important test.
31. While taking an important examination, I perspire a great deal.
33. Before an important examination I find my hands or arms trembling.
34. During course examinations, I find myself thinking of things unrelated to the actual course material.
35. I seldom feel the need for "cramming" before an exam.
38. The University ought to recognize that some students are more nervous than others about tests and that this affects their performance.
40. I get to feel very panicky when I have to take a surprise exam.
43. During tests, I find myself thinking of the consequences of failing.
44. It seems to me that examination periods ought not to be made the tense situations which they are.
45. After important tests I am frequently so tense that my stomach gets upset.
46. I start feeling very uneasy just before getting a test paper back.
48. I freeze up on things like intelligence tests and final exams.

- 51. Getting a good grade on one test doesn't seem to increase my confidence on the second.
- 55. I sometimes feel my heart beating very fast during important tests.
- 62. After taking a test I always feel I could have done better than I actually did.
- 68. I usually get depressed after taking a test.
- 71. I have an uneasy, upset feeling before taking a final examination.
- 74. When taking a test, my emotional feelings do not interfere with my performance.
- 77. During a course examination, I frequently get so nervous that I forget facts I really know.

## Appendix 2F

### THE TEST ANXIETY SCALE FOR CHILDREN<sup>1</sup>

My name is \_\_\_\_\_. I'm going to be asking you some questions----- questions different from the usual school questions for these are about how you feel and so have no right or wrong answers. First I'll hand out the answer sheets and then I'll tell you more about the questions...

Write your name at the top of the first page, both your first and your last names..... Also write a B if you're a boy or a G if you're a girl. (For the fourth, fifth, and sixth grades, "Write the name of the school you attended last year and year before last year.")

As I said before, I am going to ask you some questions. No one but myself will see your answers to these questions, not your teacher or your principal or your parents. These questions are different from other questions that you are asked in school. These questions are different because there are no right or wrong answers. You are to listen to each question and then put a circle around either "yes" or "no." These questions are about how you think and feel and, therefore, they have no right or wrong answers. People think and feel differently. The person sitting next to you might put a circle around "yes" and you may put a circle around "no." For example, if I asked you this question: "Do you like to play ball?" some of you would put a circle around "yes" and some of you would put it around "no." Your answer depends on how you think and feel. These questions are about how you think and feel about school, and about a lot of other things. Remember, listen carefully to each question and answer it "yes" or "no" by deciding how you think and feel. If you don't understand a question, ask me about it.

Now let's start by everybody putting their finger on Number 1. Here is the first question. Number 1. "Do you worry when \_\_\_\_\_?" (Repeat this procedure of introducing the questions for several of them and continue throughout to say the number of the questions before reading it.)

### TEST ANXIETY SCALE FOR CHILDREN

1. Do you worry when the teacher says that she is going to ask you questions to find out how much you know?
2. Do you worry about being promoted, that is, passing from the \_\_\_\_\_ to the \_\_\_\_\_ grade at the end of the year?

---

<sup>1</sup>Reference: S. B. Sarason, et al. (1960)

3. When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes?
4. When the teacher says that she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that she will call upon someone else and not on you?
5. Do you sometimes dream at night that you are in school and cannot answer the teacher's questions?
6. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
7. When the teacher is teaching you about arithmetic, do you feel that other children in the class understand her better than you?
8. When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?
9. When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little?
10. When the teacher is teaching you about reading, do you feel that other children in class understand her better than you?
11. Do you think you worry more about school than other children?
12. When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you?
13. If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other children when you return to school?
14. Do you sometimes dream at night that other boys and girls in your class can do things you cannot do?
15. When you are home and you are thinking about reading your lesson for the next day, do you worry that you will do poorly on the lesson?
16. When the teacher says that she is going to find out how much you have learned, do you get a funny feeling in your stomach?
17. If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry?
18. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?

In the following questions the word "test" is used. What I mean by "test" is any time the teacher asks you to do something to find out how much you know or how much you have learned. It could be by your writing on paper, or by your speaking aloud, or by your writing on the black-board. Do you understand what I mean by "test".....it is any time the teacher asks you to do something to find out how much you know.

19. Are you afraid of school tests?
20. Do you worry a lot before you take a test?
21. Do you worry a lot while you are taking a test?
22. After you have taken a test do you worry about how well you did on the test?
23. Do you sometimes dream at night that you did poorly on a test you had in school that day?
24. When you are taking a test, does the hand you write with shake a little?
25. When the teacher says that she is going to give the class a test, do you become afraid that you will do poorly?
26. When you are taking a hard test, do you forget some things you knew very well before you started taking the test?
27. Do you wish a lot of times that you didn't worry so much about tests?
28. When the teacher says that she is going to give the class a test, do you get a nervous or funny feeling?
29. While you are taking a test do you usually think you are doing poorly?
30. While you are on your way to school, do you sometimes worry that the teacher may give the class a test?

Appendix 2G

DUNN'S MODIFICATION OF THE TEST ANXIETY SCALE FOR CHILDREN<sup>1</sup>

How Do You Feel About Things In Class?

I am going to ask you some questions--questions different from the usual school questions, for these are about how you feel and so these questions have no right or wrong answers.

No one but myself will see your answers to these questions, not your teacher, principal, or your parents. Read each question with me as I read the questions aloud. You can answer each question by circling just one of the letters right below the question.

These questions are about how you think and feel and therefore have no right or wrong answers. People think and feel differently. The person next to you might answer a question in one way. You might answer the same question in another way, but both would be all right because you feel differently about the matter.

Remember, I shall read each question, including the kinds of answers you can give. Wait until I finish reading the question and then answer. Give only one answer for each question.

- (1.) Do you worry when the teacher says that she is going to ask you questions to find out how much you know about the lesson?
  - A. Worry a lot
  - B. Worry some
  - C. Worry a little
  - D. Never worry
- (2.) Do you worry about whether you will be promoted, that is, passing from this class to the next class at the end of the year?
  - A. Worry a lot
  - B. Worry some
  - C. Worry a little
  - D. Never worry
- (3.) When the teacher asks you to recite in front of the class, are you afraid that you are going to make some bad mistakes?
  - A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never

---

<sup>1</sup>Reference: Morse, Bloom, and Dunn (1961)

- (4.) When the teacher says that she is going to call on pupils to do some problems, do you hope that she will call on someone else?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (5.) Do you dream at night that you are at school and cannot answer the teacher's questions?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (6.) When you think you are going to be called on by the teacher, does your heart begin to beat fast?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (7.) When the teacher is explaining a hard subject, do you feel that others in the class understand it better than you do?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (8.) When you are in bed at night, do you worry about how well you are going to do in class the next day?
- A. A lot
  - B. Some
  - C. A little
  - D. Never
- (9.) When the teacher asks you to write on the blackboard in front of the class, does the hand you write with shake?
- A. Never
  - B. A little
  - C. Some
  - D. A lot
- (10.) Do you think you worry more about school than other pupils?
- A. A lot more than others
  - B. More than others
  - C. A little more than others
  - D. About the same as others



- (11.) When you are at home and you are thinking about your school work for the next day, do you become afraid that you will get the answers wrong when the teacher calls on you?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (12.) If you are sick and miss school, are you afraid you will be way behind the other pupils when you return to school?
- A. Very much
  - B. Some
  - C. A little
  - D. Never
- (13.) Do you dream at night that others in your class can do things that you cannot do?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (14.) When you are home and thinking about your classwork for the next day, do you worry that you will do poorly on the classwork?
- A. Often
  - B. Sometimes
  - C. A little
  - D. Never
- (15.) When you think you are going to be called on by the teacher, do you get a funny feeling in your stomach?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (16.) If you did very poorly when the teacher called on you, did it bother you and make you feel unhappy?
- A. Very much
  - B. Some
  - C. A Little
  - C. Never
- (17.) Do you dream at night that the teacher is angry because you do not know your lessons?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never

- (18.) Are you afraid of school tests?  
A. A lot  
B. Some  
C. A Little  
D. Never
- (19.) Do you worry before you take a test?  
A. A lot  
B. Some  
C. A little  
D. Never
- (20.) Do you worry while you are taking a test?  
A. A lot  
B. Some  
C. A little  
D. Never
- (21.) After you have taken a test, do you worry about how well you did on the test?  
A. A lot  
B. Some  
C. A little  
D. Never
- (22.) Do you dream at night that you did poorly on a test you had in school that day?  
A. Often  
B. Sometimes  
C. Once in a while  
D. Never
- (23.) When you are taking a test does the hand you write with shake?  
A. A lot  
B. Some  
C. A little  
D. Never
- (24.) When your teacher says that she is going to give the class a test, do you become afraid that you will do poorly?  
A. A lot  
B. Some  
C. A little  
D. Never
- (25.) When you are taking a difficult test, do you forget some things you knew well before you started taking the test?  
A. Often  
B. Sometimes  
C. Once in a while  
D. Never

- (26.) Do you ever wish that you didn't worry so much about tests?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (27.) When the teacher says she is going to give the class a test, do you get a nervous feeling?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (28.) While you are taking a test, do you usually think you are doing poorly?
- A. Often
  - B. Sometimes
  - C. Once in a while
  - D. Never
- (29.) While you are on your way to school, do you worry that you might have a test?
- A. Often
  - B. Sometimes
  - C. A little
  - D. Never

## Appendix 2H

### SCHOOL ANXIETY SCALE

#### CHILDREN'S SCHOOL QUESTIONNAIRE (SHORT FORM)

##### INSTRUCTIONS

I'm going to ask you some questions which are different from the kinds of questions you usually have in school. These questions are about how you think and feel, and so have no right or wrong answers. First we'll hand out the answer sheets, and then I'll tell you more about the questions.

First, I want you to print your names in the spaces at the top of the first page. Let me show you how it's done. . . . (boxes are reproduced on the blackboard, tester prints his name, explaining as he goes). Now you print your name in the spaces on your answer sheet, putting your first name in the spaces on the left side, and your last name in the spaces on the right . . . . Below your name is a place to write in your school. . . . Then to the right of that are the letters "B" and "G." If you're a boy put a circle around the "B", and if you're a girl put a circle around the "G". . . . Then write in the name of your teacher, writing only her last name. . . .

As I said before, I'm going to ask you some questions. These questions are different from other school questions. There are no right or wrong answers, and your teacher and principal will not see the answers you give. I will read each question, and you are to listen to it, and then put an "X" in the circle on your answer sheet that best shows how you think or feel about the question. Let me read a practice question to show you how this works. Suppose I read the question: Do you like to play football? For this question your answer sheet would look like this . . . (appropriate circles are put on the blackboard) . . . So if you don't like to play football you would show this by putting an "X" in the circle under the word "no." (illustrated on the blackboard). . .

Now, I'm going to ask you questions about how you think and feel about school, and about a lot of other things. Remember, your answer depends on how you think and feel, and your teacher and principal will not see the answers you give. So, listen carefully to each question and answer it by deciding how you think and feel. If you don't understand a question, ask me about it.

Now let's start by everybody turning to the second page and putting his finger on Number 1. Here is the first question. Number 1 . . . . (the first question is read) . . . . If you . . . (appropriate reference is made to the question content) . . . Put your "X" in the circle under "yes." and if you . . . (appropriate reference is made to the question content) put your "X" in the circle under "no." Now let's go to the next question. Number 2 . . . (question is handled as in the preceding. And with all subsequent questions the number is given, and the question is read, but the additional remarks included for Numbers 1 and 2 are discontinued) . . . .

# SHORT-FORM CHILDREN'S SCHOOL QUESTIONNAIRE

1. Do you sometimes dream at night that the teacher is angry because you do not know your lessons?
2. Are you frequently afraid you may make a fool of yourself?
3. Do you pay close attention to what the teacher says when she explains something?
4. Is it hard for you to have as good a report card as your parents expect you to have?
5. Is it hard for you to do as well as the teacher expects you to do in class?
6. Do your knees shake when you are asked to recite in class?
7. Has anyone ever been able to scare you?
8. Do you feel terrible if you break something which belongs to somebody else?
9. After you have taken a test do you worry about how well you did on the test?
10. Do you sometimes dream at night that you are in school and cannot answer the teacher's question?
11. Do you wish a lot of times that you didn't worry so much about a test?
12. Do you get as much approval from the teacher in class as you would like to get?
13. Are you sometimes afraid of expressing yourself in class because you think you might make a foolish mistake?
14. Do you get angry when you are working on something important in class and someone interrupts you?
15. Do you work hardest when you know that what you do will be compared with what other students in class do?
16. Do you worry a lot before you take a test?
17. Do you get as much approval from other children in class as you would like to get?
18. Do you worry a lot while you are taking a test?
19. When you recite in class do you often wonder what others are thinking of you?

SHORT-FORM CHILDREN'S QUESTIONNAIRE

20. Do you ever worry?
21. When the teacher gives you an assignment, do you get busy with it right away?
22. Do you often wish the teacher would slow down until you understand what she is saying better?
23. Do you expect to do better school work in the future than you have in the past?
24. Do you worry when the teacher says that she is going to ask you questions to find out how much you know?
25. Do you worry about being promoted, that is, passing from the --- grade to the --- grade at the end of the year?
26. If a child is new in class and is having trouble making friends do you make a special effort to be friendly to him?
27. Do some children in the class say things to hurt your feelings?
28. Does your mother bring cookies, help at class parties, and do other things like the mothers of the other children in class?
29. Do your classmates sometimes make fun of the way you look and talk?
30. Do you do extra work for the teacher whenever you have the opportunity?
31. Do you have a hard time keeping up with the other students in class?
32. Do you like to go on trips with your mother and father?
33. In your school work, do you often forget; or do you feel sure you can remember things?
34. Do you hate to miss school because you don't like to get behind in your work?
35. Do you ever worry about what people think of you?
36. To get others to like you do you try to find nice things to say about them?
37. Do you feel it is important to think about how you can get people to like you?
38. Do you sometimes have a fear of fainting in class?
39. Are you sometimes afraid of getting into arguments?

SHORT-FORM CHILDREN'S SCHOOL QUESTIONNAIRE

40. When you are working in a group, do you usually volunteer for more work than anyone else in the group?
41. When you make something in class, do you try to make sure that all the other children see it?
42. Do you dread choosing up sides to play games because you are usually one of the last ones chosen?
43. Do you always raise your hand in class when you know the answer?
44. Do you wish that your teacher paid more attention to you?
45. When you have done well on something, do you feel pleased with yourself even when no one else in class notices what you have done?
46. Do you always think that mother's way of doing things is better; or do you sometimes think your own way is better?
47. When the teacher says that she is going to find out how much you have learned, does your heart begin to beat faster?
48. Are you ever unhappy?
49. Do you sometimes shake all over when you are asked to recite in class?

## APPENDIX 3

IMPROVING THE IDENTIFICATION OF ANXIOUS ELEMENTARY SCHOOL  
CHILDREN THROUGH THE USE OF AN ADJUSTED ANXIETY SCALE

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Abstract:

Anxiety scores (Test Anxiety Scale for Children) from 165 sixth graders were adjusted for defensiveness (Lie Scale for Children) by an equally weighted summation of the two scores. Validity of the adjusted anxiety score was markedly superior to that of the uncorrected score, as indicated by an increase in correlation with achievement after programmed instruction (one of several criteria) of  $-.33$  to  $-.52$ .

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The present report summarizes the results of a study involved with identifying the anxious elementary school child using the Test Anxiety Scale for Children (TASC), a questionnaire measure of school anxiety (Sarason, Davidson, Lighthall, Waite, Ruebush, 1960). The specific problem concerned a method for adjusting an individual's anxiety score to correct for the invalidating effect of the lie or defensive tendency. Data and discussion center on the comparative validities of the TASC score as usually computed, and a TASC score modified in relation to a lie scale embedded in the TASC.

Theory predicts that anxiety interferes with performance on complex tasks (Sarason, et al., 1960). Relatively recent reviews indicate that the negative relationship between anxiety and achievement test or intelligence test performance exists at all elementary grade levels (I. G. Sarason, 1960; O'Reilly, 1966). While there are a few exceptions to this general trend (Kerrick, 1956; Ruebush, 1963; Wirt & Broen, 1956), and the extent of the negative relationship varies (Ruebush, 1963; O'Reilly, 1969), recent longitudinal studies (Sarason, Hill, & Zimbardo, 1964; Hill & Sarason, 1966) showed

that the negative relationship between anxiety and achievement test performance increased over the school years, was highest with test scores involving verbal skills and was unexpectedly high when achievement levels were examined for students with very high test anxiety and high defensiveness scores. In this case, achievement differences between high and low anxious students (with other differences controlled) were as great as two to three years in grade-equivalent reading scores.

Although studies in the school setting have generally shown a negative relationship between questionnaire measures of anxiety and test performance, which at times has appeared to have considerable practical significance (Hill & Sarason, 1966), in the great bulk of studies the negative correlations have been generally low. In fact, when intelligence is partialled out, the relationship between anxiety and test performance may be nonexistent (cf. Jones, 1961; O'Reilly, 1966). Recent research (Phillips, 1966) suggests that one of the major reasons for these weak relationships is the tendency of some children to lie about their anxious feelings, to be defensive, thus depressing their "true" scores on questionnaire measures of anxiety.

Procedures are available for measuring the lie tendency, one of the most widely used being the Lie Scale for Children (LSC), developed by Sarason, et al. (1960) for use in conjunction with the TASC. Unfortunately, ambiguity concerning the meaning of defensiveness, as measured by the LSC, apparently has prevented a consistent and constructive use of the scale. Analysis of the content of the LSC reveals that it is composed of a relatively homogeneous group of items referring to common or universal anxiety experiences (e.g., "Do you ever worry?"), which it is assumed nearly all children experience. Positive response to the items indicates both recognition of internal anxiety and ability to admit to it. Negative responses would seem to mean that the

individual cannot admit feeling even ordinary stress, to himself and/or to others. It was assumed that this tendency not to admit anxiety affected responses to the TASC items as well, thus depressing the individual's "true" anxiety score.

A procedure for determining the extent of the hypothesized depressive effect of lying on the child's "true" anxiety score did not suggest itself in the literature. Hill and Sarason (1966), in their longitudinal study of anxiety and defensiveness in children, concluded that TASC and LSC responses were qualitatively different, but had similar and additive effects on achievement. However, in their analyses, the invalidating effect of LSC scores was partialled out of the TASC-achievement correlation. Other investigators (Sarason, et al., 1960) have simply used the LSC as a basis for discarding questionable anxiety scores.

If defensiveness distorts anxiety scores, the negative relationship between anxiety and achievement scores would be decreased. However, the anxiety scores could be "adjusted" using defensiveness scores. If these adjusted scores are actually more valid, they will correlate more highly with achievement and/or intelligence scores. This paper concerns an investigation of the interrelationships among anxiety, defensiveness, intelligence, and achievement (as measured by the TASC, LSC, Lorge-Thondike, and program error scores and a criterion test respectively).

#### METHOD

Data for the study were based on the responses of 165 sixth graders who participated in a separate study involving programmed learning. The sample comprised 80 boys and 85 girls in nine classes from two school systems

in south central New York State.

Ss were given ten lessons of programmed instruction on as many consecutive school days. Responses to the program, Latitude and Longitude (Coronet, 1962), were tabulated to give error scores. Instruction was followed by a 50-item criterion achievement test. Other data used were obtained from the pre-instruction administrations of the TASC, LSC, and the Lorge-Thorndike Intelligence Test, Level III, Verbal Form A.

The initial scoring procedure involved combining the Ss' TASC and LSC scores. Since the standard deviation of the TASC scores (mean = 12.44) is three times that of the LSC scores (mean = 2.12), the latter were weighted to give them equal importance in determining the estimate of the Ss' "true" anxiety scores. Equal weighting was accomplished by converting both TASC and LSC scores to standard (z) scores, and then summing individuals' standardized TASC and LSC scores to make a composite score termed the "adjusted TASC" score [TASC(adj.)]. Test-retest reliabilities (2 1/2 weeks, pre-instruction/post-instruction) of the tests were TASC, .76; LSC, .66; TASC(adj.), .66.

Comparative validities of the uncorrected TASC score and the TASC(adj.) were tested by obtaining correlations for both scores with three criteria: intelligence scores, achievement criterion test scores, and program error scores. Of primary interest at this point was the difference between the correlations with the criteria for the two scores, the TASC, and the TASC as initially and somewhat arbitrarily adjusted. This comprised stage one of the study.

Stage two of the study was to ascertain whether the relationship to achievement could be further increased by optimally weighting TASC and LSC scores, using multiple regression analyses. The major considerations were:

1. Is equal weighting of TASC and LSC scores the optimal procedure for the highest correlation with achievement?
2. Does the TASC(adj.) account for any more of achievement than the TASC when IQ is included as a predictor?

## RESULTS

Major results of the study were threefold. What was of main interest was the difference in correlation between the TASC and TASC(adj.) with the three criteria.

Table 1 shows that approximately 11% of the variance of the criterion achievement test scores could be accounted for by the TASC alone; for the TASC(adj.), the relationship increased to 26%. The corresponding results for IQ scores were 8% for the TASC score and 21% for the TASC(adj.) score. Both increases were highly significant ( $p < .005$ ).<sup>1</sup> The improvement in relationship with error scores for the TASC(adj.) is not as dramatic--an increase of only 7% to 8%.

Table 2 presents a complete intercorrelation matrix for the variables in this study. On the one hand, for achievement and IQ there were remarkable increases in correlation when using the TASC(adj.). On the other, for program error scores, there was very little increase. What may be of most practical significance when interpreting such a contrast is a consideration of the difficulty levels involved.

The mean difficulty levels (percent incorrect) for the various units of the program ranged from 7.8% to 20.9%, with an average of 12.6%. This last is close to the range of acceptability for programmed materials and is considerably below the difficulty level of the criterion achievement test,

<sup>1</sup>Differences between correlations were evaluated using one-tailed t tests for nonindependent rs (Edwards, 1963, p. 85).

which had a mean score of 57.8% with a S.D. of 20.4. (Mean intelligence was 110.7 with S.D. of 13.4.) The premise of the present study is that the TASC(adj.) score measures the extent to which anxiety (and defense) interferes with test performance under stress. Anxiety theory (Atkinson, 1965) predicts that moderate difficulty levels induce much more stress than either very high or very low difficulty levels; the latter conditions allow the introduction of effective defense mechanisms. The data presented in tables 1 and 2 are consistent with this expectation. With the low difficulty level of the program as a criterion, it is seen that TASC(adj.) scores offer no real improvement of validity over TASC scores. Examination of the correlations of TASC and TASC(adj.) scores with achievement and IQ scores, however, showed the TASC(adj.) scores to be markedly superior in validity. Thus the theory suggests that, with these more difficult tasks, the defense mechanism (denial) has been penetrated and performance has suffered.

Results for stage two of the study are presented in a table of four multiple correlations, or regressions. In table 3, regression 1 shows that when TASC and LSC are optimally weighted, the correlation with achievement is virtually identical to that of the TASC(adj.) with achievement. Optimal weighting produced a correlation of .525 vs. .520 for equal weighting (see table 2). Therefore, in practical terms, equal weighting for TASC and LSC would seem to be the best way to construct TASC(adj.).

An examination of regressions 2 and 3 shows that even with IQ in the regressions, the TASC(adj.) produces just as high a correlation as when the components, TASC and LSC, are separately and optimally weighted.

A comparison of regressions 3 and 4 provides another check on the superior validity of the TASC(adj.) over the TASC alone, this time with IQ receiving a separate weight (as opposed to the simple univariate correlations

presented in table 2). The correlation (and  $R^2$ ) for regression 2, which includes the TASC(adj.), is significantly greater than that for regression 4, which included only TASC with IQ ( $F_{1,161} = 9.6$ ,  $p < .01$ , McNemar, 1962, p. 284).

### CONCLUSIONS

The results of the comparisons of the validities of TASC and TASC(adj.) scores further underline the importance of including measures of defensiveness in studies using questionnaire measures of anxiety with children. From a practical point of view, the findings offer a simple procedure for improving the validity of questionnaire measures of anxiety. However, the generality of the findings of the regression analyses and the procedure for obtaining the TASC(adj.) score should be tested on additional samples of children before stable conclusions can be drawn.

An explanatory framework regarding the psychological meaning of different levels and combinations of TASC and LSC scores is advanced in O'Reilly (1969).

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TABLE 1  
Comparison of the Percents ( $R^2$ ) of Achievement Variance  
Accounted for by the TASC and TASC(adj.)

Hypothesized Correlates of Anxiety	TASC	TASC(adj.)	Increase <sup>a</sup>
Criterion Test	11%*	27%*	16%*
I.Q.	8%*	21%*	13%*
P.I. Error Scores	7%*	8%*	1%

<sup>a</sup>TASC(adj.) minus TASC

\* $p < .005$

TABLE 2  
Intercorrelations of all Variables

Variable	1	2	3	4	5	6
1. Error Scores (Tot.)	_____	-.48	-.55	.26	.28	.07
2. I.Q.	-.48	_____	.74	-.28	-.46	-.26
3. Criterion Achievement	-.55	.74	_____	-.33	-.52	-.28
4. TASC	.26	-.28	-.33	_____	.56	-.31
5. TASC(adj.)	.28	-.46	-.52	.56	_____	.62
6. LSC	.07	-.26	-.28	-.31	.62	_____

N = 165

TABLE 3  
Multiple Correlations (Regressions) with Criterion Achievement  
as Dependent Variable

Regression	R	R <sup>2</sup>	Standardized Weights			
			TASC	LSC	I.Q.	TASC(adj.)
1	.525	.276	-.467**	-.426**		
2	.773	.597	-.214**	-.181*	.638**	
3	.772	.596			.638**	-.232**
4	.756	.572	-.139*		.706**	

\* .02 < p < .01

\*\* p < .001

N = 165

Note.--All regressions were direct, and included only those variables for which figures are given.

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